

The Mining Journal

Established 1835

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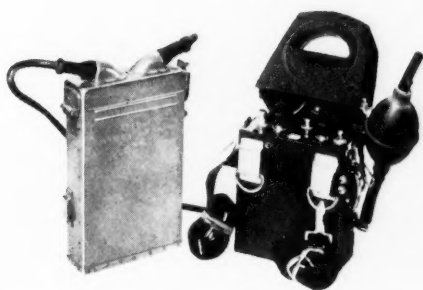
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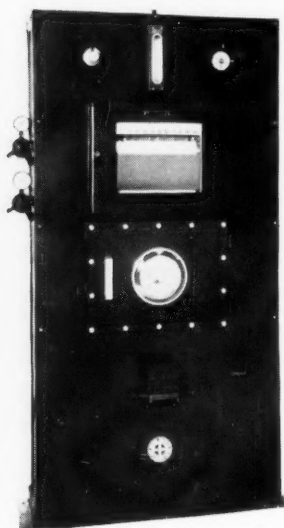
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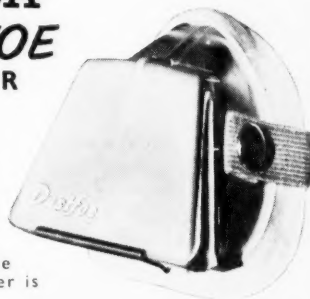
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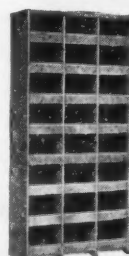
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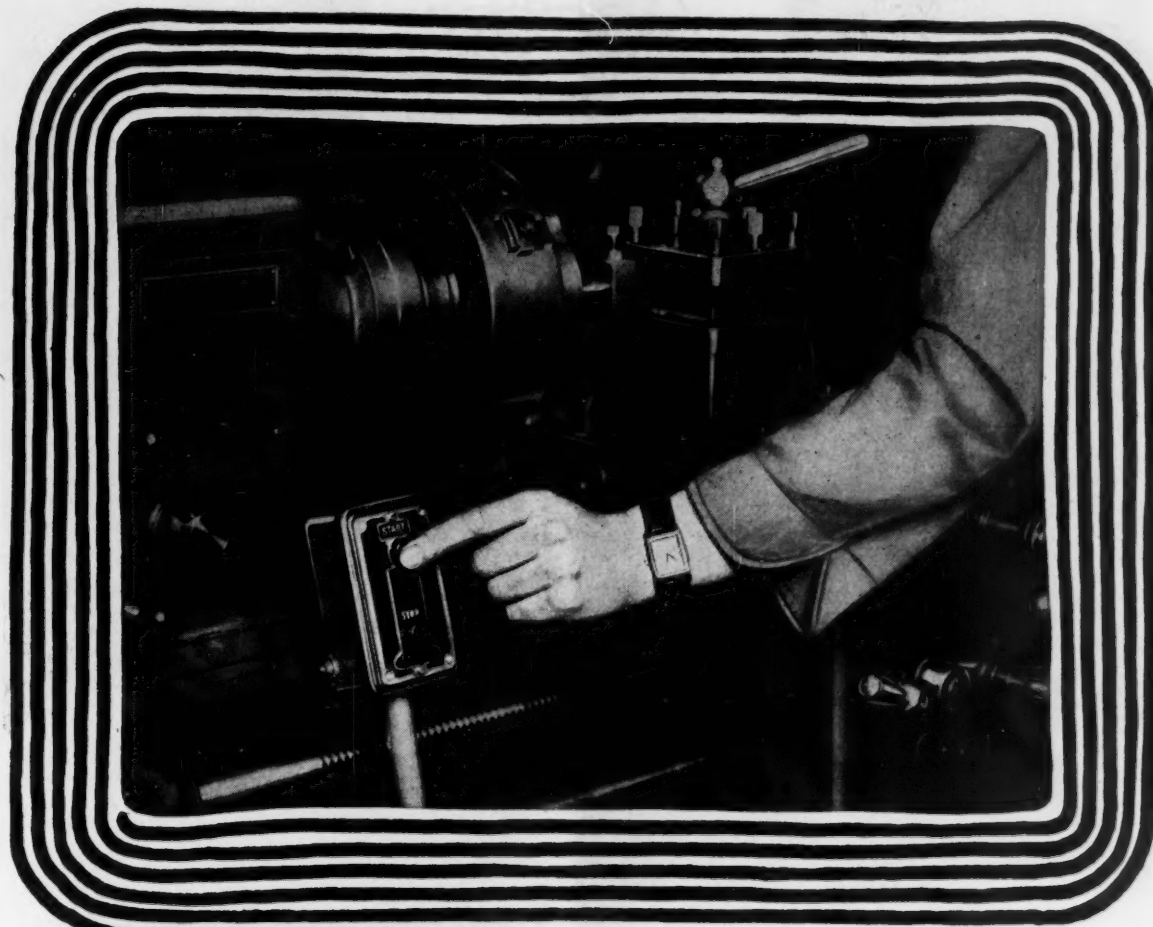
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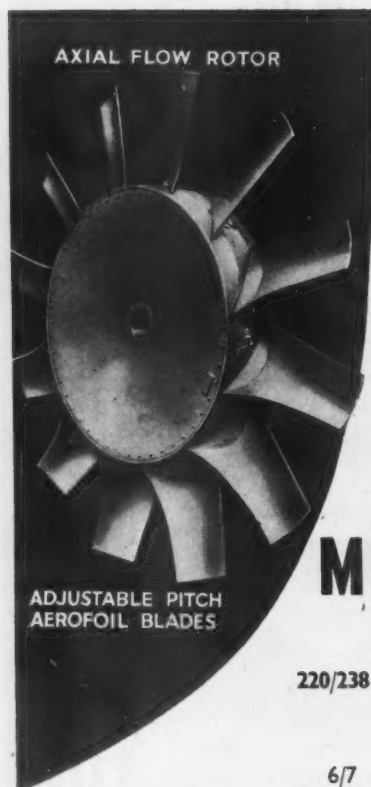
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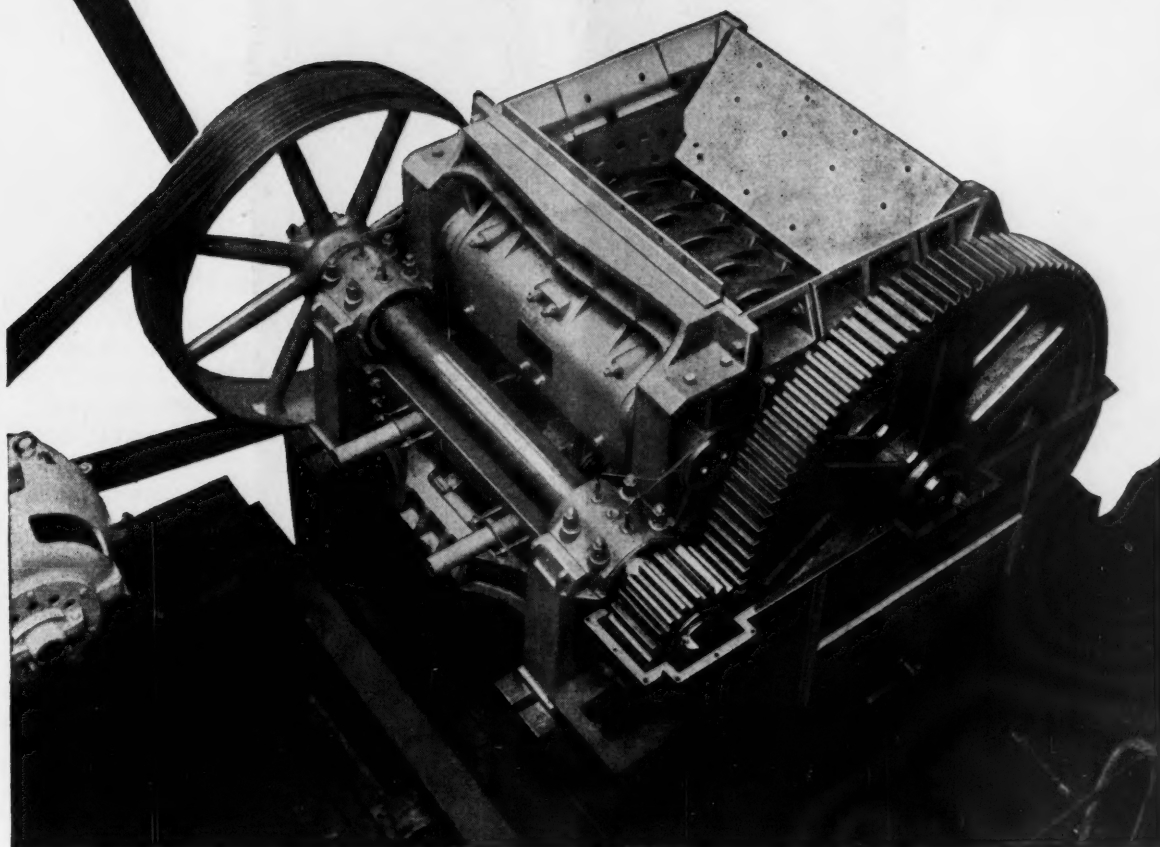
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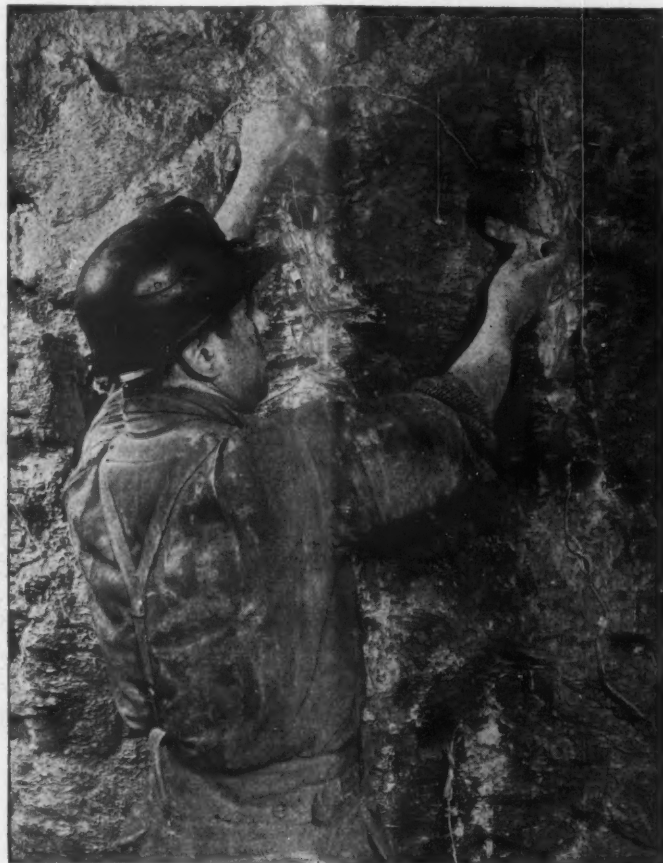
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NOTES AND COMMENTS

Crisis in the Indian Manganese Industry

The end of the war in Korea, the cessation of American stockpiling leading to the falling off in demand and lowered prices are, perhaps, the principal links in the chain of events which have brought about the present serious crisis in the Indian manganese mining industry.

Our Indian correspondent in a despatch received last week gives some idea of the present situation when he writes that about 25,000 Indian manganese mine workers in India are now standing idle and that in Madhya Pradesh over 60 of its 200 manganese mines have closed down during the last five months.

Madhya Pradesh, which accounts for over 70 per cent of India's manganese ore exports and is the largest manganese producing area in the world, has been particularly effected. In 1953, India exported 1,660,000 tons of manganese ore valued at Rs.260,000,000 of which the share of Madhya Pradesh was 1,000,000 tons. But this year total exports to date have not exceeded 25,000 tons.

While the cessation of U.S. stockpiling and the lowered prices have been cited as the chief reason for the present position there are other important contributory factors, not the least of which has been the appearance in the world manganese market of Russia, Brazil and South Africa.

On the other hand, our correspondent points out that there is a great deal that could be done in India to ameliorate the present situation. This side of the problem is being dealt with by the Madhya Pradesh Mineral Industry Association which for some time has been urging the Government of India to do what it can to provide relief to the industry. In particular, the Association has been pressing the Government to effect a considerable reduction in the present export duties of 15 per cent which, it argues, must be reduced to negligible proportions or abolished altogether if Indian manganese is to compete successfully in the international market. Further, the Association is stressing the need to institute a firm export policy with regard to minerals in the context of the changed conditions of the international market and for proper co-ordination between the Ministries of Commerce and Industry, Natural Resources and Railways.

The need for such a policy in Madhya Pradesh would

seemingly be an essential pre-requisite to rescuing the industry from the doldrums. Madhya Pradesh, aside from producing the bulk of India's manganese ore is also endowed with iron ore, bauxite, coal and other minerals, but its remoteness from ports has been a great handicap to the development and exploitation of these resources. Moreover, the position is worsened by the control exercised by the railways over the allocation of trucks to rail the ores to the port of shipment. A further difficulty has been the cramping regulations connected with exports and our correspondent writes that approximately 3,750,000 tons of marketable ore—apart from other low grade ore—are lying in dumps in Madhya Pradesh, more than 1,000,000 tons in like circumstances are in the Srikakulam district, while the situation in Bihar is equally depressing.

The one bright spot in an otherwise sombre outlook is the announcement that freight rates on manganese ore shipments from Karachi, Bombay, Marmagosa, and Kathiawar to the main ports of entry in the United Kingdom and on the Continent have been reduced from 85s. to 80s. per ton, the new rate being subject to the existing rebate of 5s. per ton. The reduction was arranged by the Karmahom Conference, which consists of American, British, Continental European and Indian shipping companies, as the lines' contribution towards the reduction in the present high selling price of manganese ore.

Despite the rather depressing picture outlined in the foregoing, the present situation does not apply in full to the Central Provinces Manganese Ore Company whose new heavy media separation plant was officially opened on February 28 last and is described in this issue on page 68. Indeed, it is understood that the company can market every ton treated by its new plant and arrangements are in hand to erect another plant at its Balaghat mine which, if all goes well, will be in operation in about two years' time.

Nevertheless, the industry generally is still in the midst of hard times, a fact reflected in the figures released by the U.S. Bureau of Mines which showed that imports of manganese ore containing 35 per cent or more manganese decreased in March last by 22 per cent from the February figure. However, of the 221,889 s.tons imported during that month, India supplied 45 per cent as against 17 per cent for the Gold Coast, 9 per cent for Brazil, and 16 per cent

for the Union of South Africa. With regard to South Africa there have recently been reports that manganese ore is piling up at the pitheads owing to the inability of the railways to move it to the ports.

Gold Coast Government Diamond Market Opened

The Gold Coast Government diamond market was officially opened at the beginning of this week. The Government's decision to establish a diamond market in Accra was made known in May last when it was stated that diamond winners would be able to sell their diamonds direct to diamond dealing firms licenced to deal in the Accra diamond market. It is understood that licences to deal will only be issued to recognized diamond merchants with a capital of not less than £100,000 paid up in a locally registered company, together with evidence of ability to call on further funds. In any event the number of licences to be issued in the first 12 months will be restricted to three, although the position will be reviewed at the end of that period.

It has been pointed out that the establishment of the diamond market is not an attempt to restrict the marketing of diamonds won by Africans in the Gold Coast to its own diamond market, as the former facilities provided by the banks for this purpose will still be available.

That being so the establishing of the Accra diamond market will not help to counter the thieving and illicit mining practised widely in the Gold Coast and in Sierra Leone. That the Gold Coast Government has deemed it necessary to establish facilities which duplicate the already adequate accommodation provided by the banks, may well prove to be the forerunner of supporting rules and regulations directed towards reducing the diamond depredations.

On the other hand, as a relatively large proportion of all diamonds found in British West Africa are industrial stones, the establishment of the Government controlled market may be linked with the prevention of smuggling industrial stones to Iron Curtain countries. But this is pure conjecture and in the absence of any further official information, the establishment of the market would seem to have only a local significance.

Problems for the Coal Mining Engineer

It should be consoling to the British public chastened by repeated advances to unheard of levels in coal prices; menaced by warnings that the supply position is becoming progressively more precarious threatening the curtailment of exports and increase in imports; to say nothing of incitements to strike action, official or unauthorized, to find Mr. Noel Webster, the President of the Institute of Mining Engineers at the Society's annual dinner last week able to say that they are not afraid of the challenge facing us at the present time and to regard these difficult circumstances as an opportunity to create conditions which will lead to the fulfilment of their dreams.

Unfortunately, the public has little or no opportunity of forming its own judgment on the progress which our coal mining industry has made since it was nationalized, and indeed, the official "hush hush" curtain drawn over the industry was recognized by Lord Hyndley who warned us that only a corner could now and then be raised, to give us a peep of the progress being made within. However, Mr. Webster's statement that within the Institute's portals "the highest policy" is discussed in complete privacy certainly suggests that its members have been granted the *entrée* into the Ministry's innermost sanctum and these revelations may be the foundation for the rosy views of the future which Mr. Webster evidently entertains.

The Mining Journal for nearly 130 years has followed

the fortunes of what is to-day almost the only great branch of mining left to this country. With such a background, it is understandable if we have perhaps inherited a tinge of scepticism when so much that is material to a right judgment is withheld.

One of the defences for our failure to show comparable progress with the U.S. coal mining industry in recent years has been our lack of the latest machinery and plant and during and since the war large orders, we have been informed, were placed in the United States. It is therefore somewhat disquieting to be told that the elaboration of plant now installed necessitates the services of electricians, mechanical engineers and so on whom the mining engineers can neither recruit nor train. Mr. Webster voiced a strong appeal for more public support in securing the recruitment of the "right type of people." Nationalization of any industry narrows, perhaps, the appeal which it offers to the more enterprising and ambitious of our youth and the more a policy of secrecy and confidentiality is practised the less sympathy will it create.

Portugal

(From Our Own Correspondent)

Oporto, June 11.

A considerable stir has been caused in mining circles here over the rumour that the export of WO₃ residues would not be allowed, also that the minimum metal content of tungsten ores would shortly be fixed at 70 per cent, nothing below 70 per cent being allowed to be sold as "produce of Portugal." At first sight these rumours are notable for their originality if for nothing else.

Considerable shipments of WO₃ residues have been made to Germany, and more would have been shipped had it not been for a very understandable action on the part of the custom house in requiring an assay to be made by the custom house laboratory in order to determine the WO₃ content of the ore. The export duty is assessed on the WO₃ content, which must not exceed 25 per cent. Until the result of the assay on the samples drawn by custom house officials is known the ore can only be shipped if the exporter deposits the full duty payable on ore testing 25 per cent, a very considerable sum when the parcel runs over 100 tonnes. In one case some £5,000 had to be deposited as a guarantee. Reputable shippers agree that this action is necessary, but feel that they might have been given a hearing before the new regulation was put into effect.

The very latest news is that both tantalite/columbite and beryl are considered to be of national interest and will be included in the category of uranium ore. It is too early to comment on this measure, the reasons for putting it into effect or its utility. Whereas beryl has hitherto been exported only in very small amounts a certain tonnage of Ta205/Cb205 has been sold. The general expectation is that a fixed price per kilo will be offered by the recently appointed government commission for the control of all materials used for or likely to be used for atomic energy.

Portuguese mineral and metal exports in April were notable for the large WO₃ shipments which amounted to 402 tonnes. This was due mainly to the increase in shipments to the U.K. which totalled 203 tonnes, practically the same as in the whole of the first quarter. Exports of tin concentrates were 47 tonnes of which the U.S. took 15 tonnes, the first shipment recorded this year; the U.S., however, took 70 tonnes of metal in the period January-April. Other exports in April in tonnes were: cupreous pyrites 28,706; other pyrites 4,000; haematite 5,235; magnetite 1,960; white arsenic 125; metallic tin 40.

Mexico

(From Our Own Correspondent)

Mexico City, June 25.

Once again there is much talk about what should be done to ease the difficult mining situation here: a reduction or abolishment of taxes, encouragement of new capital investments, national and foreign, construction of country roads and branch roads to mining sites, or a highly improved system of transportation. Gustavo P. Serrano, president of the Mexican Mining Chamber has again urged for united action to achieve a revival of the industry. While it has contributed to the equilibrium in foreign trade balances due to heavy sums of foreign money acquired by Mexico (dollars), the fact is that the Mexican mining industry is paying 23 per cent of the annual national budget.

The talk of exhausted mining resources was vigorously denied by Serrano. The president insisted that it was solely to lack of exploitation that production figures are falling off, and that there are many unexploited minerals in the republic. Touching on charges that the Mexican mining industry is controlled by foreign capital, he admitted that in part this is "unfortunately" true. However, he charged that the fault lay in the short vision of Mexican investment capital, citing as a fact that in the past two decades the total investment in the mining industry has been \$20,000,000 whereas in other countries investments have totalled billions.

There is no domination of the Mexican mining industry by foreign investors. All that is necessary, the president said, is that Mexican venture capital should be invested in mining operations, and not in paltry hundreds of thousands of pesos, which approximates only \$80,000 to \$100,000, but in substantial sums. Mexican capital could thus quickly dominate the national mining industry.

INACCESSIBILITY OF MINES

Another grave problem, even in regions where there are country roads linking to main highways, is the fact that branch roads to mine sites are sadly lacking. This makes it impossible or costly to move production to refining plants. A planned programme of branch and country roads would reflect to the benefit not only of miners but also to agricultural activities and the economy in general, the president concluded. Yet with all the talk, there does not appear any concrete hope that the mining situation here will improve in the months ahead.

Mexican mine exports to the United States this year will total approximately 203,000 tons of zinc, 198,000 tons of lead and 48,000 tons of copper, according to estimates made by the Federation of Mining Associations. Base for these figures is the current production rhythm and the prospects of increased production in the latter half of this year. The U.S. exports account for 80 per cent of Mexican copper production and 90 per cent of lead and zinc, the Federation report said.

THE TAX BURDEN

According to latest U.S. quotations the mining organization indicated that a kilo of copper is paid at the rate of 8.02 pesos (48 c. and a fraction); lead 3.85 pesos (30 c.), and zinc at 3.03 pesos (18 c. and a fraction). However, imported metals do not quite obtain these quotations, but with the difference only being slightly less. The quotation for silver from foreign sources is 409 pesos a kilogram (\$32.72), according to the Federation statement.

While Mexico apparently has a market for its production in the United States, the Federation warned that the national mining situation will not improve, and still is in a

"crisis" stage. International markets are not reacting satisfactorily and taxation with which the federal government burdens the industry makes it extremely difficult to achieve a healthy economic status.

COMPANY ACTIVITIES

The Dolores mine at Angangueo, Michoacan, closed down after a fire last year, is to be re-opened by a new Mexican operating company, Impulsora Minera de Angangueo, which has been formed, headed by mining engineer David Contreras Castro, a professor at the National University and the Polytechnical Institute. The mine, when under the management of American Smelting and Refining, had been subject to much litigation and labour difficulties. Nacional Financiera, the semi-official financial agency, has promised aid as well as support from private concerns and organizations.

The new firm is a corporation and begins operation with an initial capital of 2,000,000 pesos (\$160,000) and a credit of 5,000,000 (\$300,000). The ultimate goal is to have a capitalization of 20,000,000 pesos (\$1,600,000). Operations will begin shortly and heads of the enterprise are confident that they will give the lie to American Smelting's statement that further exploitation would be unprofitable.

The old El Boleo copper mine near Santa Rosalia is to be re-opened. After 70 years of operation, the El Boleo firm shut down in the beginning of 1953, affecting 400 workers. As early as 1948 the mine management had suggested turning over to the workers. Sr. Agustin Olachea Aviles, the Governor, was a motivating force in the re-opening of the mine, also pushing through the cutting of a new road at a minimum cost of \$24,000. A new mining firm, Compañía Minera de Santa Rosalia, S.A., with a capitalization of 1,500,000 pesos (\$120,000) has been formed with miners, the State, and Francisco Garcia Quintanilla, owner of the Lucifer mine, as well as other private investors providing the initial financing.

Preparatory work has already been begun at the mine and there is hope that production will run upwards of 100 tons a day. There is a reserve of 150,000 tons, according to mining engineers, of 4 per cent ore, with this sufficient to provide work for more than three years. During this time plans are to initiate new explorations. Under the old management the mine had reached a capacity of 3,000 tons daily and employed 6,000 workers. Before shut-down production had dropped to 300 tons, with 400 workers. The new management intends to employ an initial force of 600 miners.

EXPORTS IN 1953

The National Bank of Foreign Commerce has released Mexican silver export figures, with these showing a total of 928,000 kilos exported in 1953 as compared with 509,768 during the previous year. This good export showing was made despite the fact that in 1953 silver production in the republic showed quite a sharp fall off.

The 1953 exports were valued at 218,200,000 pesos (\$25,375,120 at the then prevalent exchange) as compared with 119,600,000 pesos (\$13,107,980) in 1952. Principal buyer was the United States, acquiring 593,262 kilos; Germany bought 153,105 kilos; France 138,701 kilos and minor sales were also made to Switzerland, Holland, Portugal, Cuba, Columbia and Panama.

Silver production in Mexico for 1953 was 45,000,000 troy oz., less 5,300,000 oz. attributed to 1952 production. Production for the three-year period 1951-53 totalled 139,100,000 oz. This is compared with production of other silver producing countries as follows: United States (for the same three-year period) 115,200,000; Central and South America 92,200,000, and Canada 78,200,000.

Separation Plant for Manganese Ore at Indian Mine

The new heavy media separation plant erected by Central Provinces Manganese Ore Company Limited at its Dongri Buzurg mine, Madhya Pradesh, was officially opened on February 28, 1954, and the following article, condensed from a pamphlet issued by the company, describes the separation process used at the plant. The importance of the Dongri Buzurg plant to the manganese mining industry of India may be judged from the realization that C.P.M.O. produces about one-third of Indian manganese output and that the new separation plant is the forerunner of a similar installation of double capacity which is being planned for the company's Balaghat mine.

The new heavy media separation plant erected by Central Provinces Manganese Ore Company Limited at its Dongri Buzurg mine, Madhya Pradesh, was officially opened by Dr. S. S. Bhatnagar, D.Sc., F.R.S., secretary of the Ministry of Natural Resources and Scientific Research, Government of India, on February 28 this year.

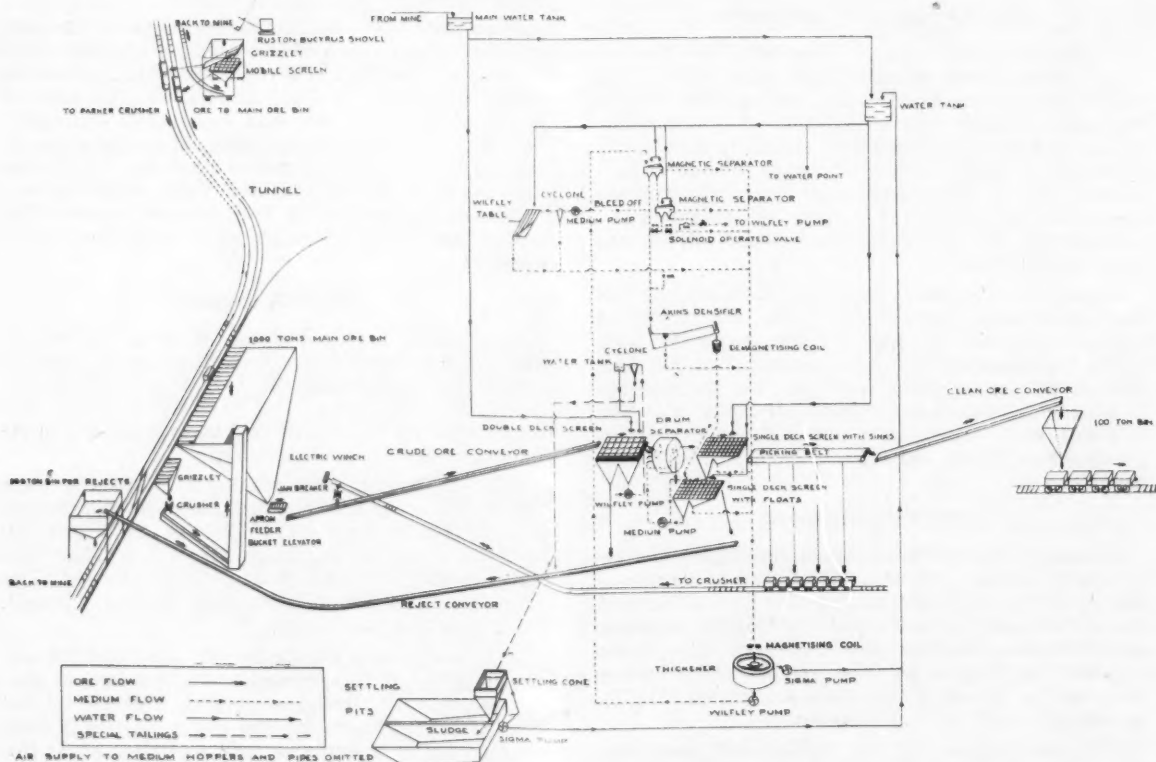
The new H.M.S. plant will recover approximately 132,000 tons of manganese ore from off grade ore formed in rock bed dumps near the mine, and is the first of its kind to separate manganese ore in India. It is of marked importance to the Indian manganese mining industry, as of the approximate 1,460,000 tons which comprises the national manganese output, some 50 per cent is produced in Madhya Pradesh and 30 per cent by the company. The dumps in the vicinity of the mine contain approximately 42 per cent of extracted material, and after the treatment of ore from this source the new plant will deal with fresh ore from future mine workings.

The heavy media separation process utilizing ferrosilicon as the media, is a comparatively recent development. Its history dates back to 1951 when experiments were begun to

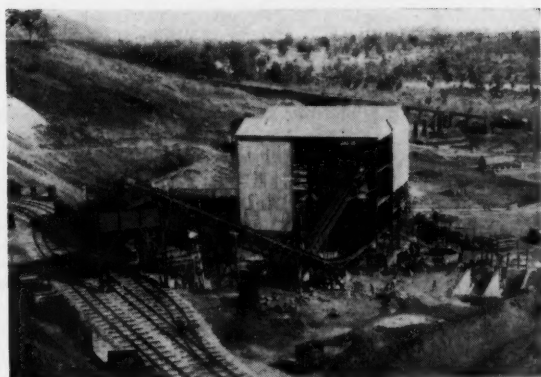
determine whether the ores at the Dongri Buzurg and Balaghat mines would be amenable to this treatment, and the necessary research was accordingly undertaken in London and the plant designed in 1952. All small ore above $\frac{1}{4}$ in. size that has accumulated in the Dongri Buzurg dumps because the pieces were too small for hand picking will be processed in the plant and will thus become available for sale.

In the initial experiments that preceded the design of the Dongri Buzurg separation plant, it was found that a certain amount of ore of 60 to -200 mesh was magnetic, necessitating magnetic separation to remove the likelihood of the density of the medium in the drum becoming seriously affected. The relevant equipment was installed to separate this fine material in the event of it becoming important, and this was done by means of a Wilfley table in combination with the cyclone at the top of the plant.

A second problem, and one for which a solution will soon be found, is the determination of the best method of treatment for fresh ore from future mining operations. All small ore and mixed material above $\frac{1}{4}$ in. size and unsuitable



Flow-sheet of the Dongri Buzurg heavy media separation process



The plant, looking from the north, showing the crude ore conveyor, float conveyor, reject bin and settling tanks

for hand picking will be sent for treatment directly to the new plant from the mine.

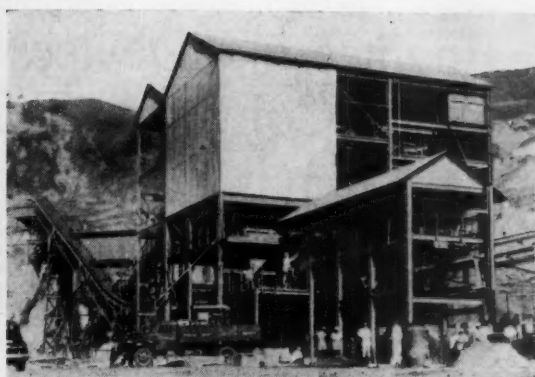
It is of prime importance throughout the entire operation of the plant to conserve water as far as possible, especially as the water table in the district is unusually low owing to poor monsoons in the three seasons preceding 1953. It was thought that supplies of well water would be adequate to ensure the operation of the plant but if this supply does not fully materialize it will be necessary to pipe water from the Bawantheri River some two miles from the mine. It will be seen from the flow-sheet that every precaution has been taken to conserve water.

SIGNIFICANCE OF THE DUMPS

The dumps are on the north side of the hill at which the Dongri Buzurg plant is situated and constitute a valuable asset despite certain criticism of the amount of ore they contain. The dumps were built up during the early days of the mine when transportation and techniques of treatment had not reached the efficient standards of the present day. Yet only a very small proportion of the mineral is likely to be lost. Material from the bed deposits themselves was deposited on the dumps in two sizes comprising large fragmentation of mixed ore, gondite and country rock, and smalls broken down in the cleaning of the ore. By this method large tonnages of mixed ore and rock as well as fines have become available, and only the foresight of forming separate dumps of waste likely to be fitted for treatment made possible the separation plant.

The dumps contain small size ore and waste or larger pieces of mixed ore and waste. This material is first dry screened as pieces smaller than $\frac{1}{4}$ in. are unsuitable for the plant, designed as it is for the treatment of pieces ranging between $\frac{1}{4}$ in. and 5 in. in size. Pieces larger than 5 in. are broken in the primary crusher, and the screening of pieces smaller than $\frac{1}{4}$ in. size takes place at the pre-wet screen. All this material and the floats are returned for dumping, and when all the dumps have been worked through the percentage recovery of economic ore will be very high. Large Ruston Bucyrus earthmoving equipment is used in working on the dumps.

In principle, the operating process of the new separation plant is a simple one, consisting of the separation of light



The plant, looking from the south, showing all three conveyors and the picking belt structure

from dense material in a medium of ferrosilicon in water at a density which can be maintained up to 3.4 times that of water itself. This operation is carried out in a Wemco drum separator, the heart of the process, and the heavy pieces of ore sink in the medium to be drawn off separately from the lighter pieces of unusable material. The average density of Dongri run-of-mine ore is 4.1, although there is a small percentage of good ore in a porous state of particularly light density. Between the density of the medium and the average density of good ore a proportion of unmarketable pieces exist containing ore mixed with rock.

It has been necessary, therefore, to pass the sinks over a belt where these mixed rock pieces are hand sorted and are returned to a secondary crusher wherein size reduction takes place and the pieces of manganese ore are freed from the waste rock. It is considered that subsequent operation of the plant may prove a picking belt to be desirable for the floats, should any appreciable quantity of good ore or mixed rock be carried over with them. It is also necessary to recover as efficiently as possible the expensive ferrosilicon used in the medium, and adequate arrangements have been made to accomplish this.

THE RECOVERY SEQUENCE

In the recovery sequence utilized at the new plant, the coarser ferrosilicon falls through the first half of both the sink and float single deck screens following the Wemco drum separator, and is returned to the circuit through the 6 in. Wemco medium pump. The second half of the screen is water washed, the fine ferrosilicon and slime which passes through being sent to the thickener to reduce water content. The ferrosilicon and slime is pumped from the thickener

to the two magnetic separators where the magnetic property of ferrosilicon becomes effective and the material is removed. The ferrosilicon is then sent to the Akins densifier in which the density of the mixture of ferrosilicon being returned to the circuit is controlled, and thereby the density of the medium in the drum separator.

A plant of twice the capacity to that of Dongri Buzurg is being designed for the company's Balaghat mine, and it is anticipated that the second plant will be in operation in approximately two years, treating the mine output and dumps.



A Ruston Bucyrus 43 unit removing dump ore to the plant

Engineering Devices for Blast Furnace and Converter Treatments of Ores

By C. C. DOWNE

Since blast furnace and converter treatments of various ores represent one of the most economical means of concentration, various efforts have been made to develop and improve on existing devices and equipment in order to expedite the work generally. This relates alike to blowers, tapholes and automatic signalling arrangements used for modern furnaces, and to the hydraulic gear and safety devices for converters, as well as automatic means of flue gas testing. The following article describes some of the equipments already in operation.

While many furnace blower units, if not most of them are operated by electric motor, or improved form of steam engine which permits the closest control, gas-engine drive has been developed elsewhere. In one of the large self-contained blower units, driven by gas engine, which develops 3,860 h.p. at 80 r.p.m. the stroke of the engine is $5\frac{1}{2}$ ft., and the two gas cylinders each have a dia. of approximately 5 ft. The air cylinder has a dia. of $10\frac{1}{2}$ ft., the volume of free air drawn in per min. is 64,000 cu. ft., and the pressure in the air line is $15\frac{1}{2}$ lb. per sq. in.

This system requires only two pipe lines, saves the separate scavenging line otherwise used, and only the air is under pressure, while the gas is sucked-in in the usual way. Gas engines of this kind operate on the scavenging-and-charging principle, the arrangement of which is at the rear-end of the engine. The drive is by the extended piston rod, while the front frame with the bearings for the crankshaft, is divided longitudinally. What air is drawn from the atmosphere is compressed to a working pressure which varies with the height of the furnace, and the nature of the ore, etc., and the engine is designed to supply all the air consumed in the layout.

The piston which draws in the air and compresses it, is connected to the extension of the piston rod of the gas engine, and the suction and pressure valves are accommodated in two separate valve housings, which surround the cylinder, and are of the guided-plate type, to permit of ready accessibility. The necessary scavenger air for the gas engine is furnished by a much smaller blower which is attached to the main cylinder.¹

AUTOMATIC TAPHOLE PLUGGING AND SIGNALLING DEVICES

Troubles with tapholes of blast furnaces depend to no small extent on the manner of building-up within the hearth. Generally speaking, charges which are relatively rich in arsenic and antimony contents forestall this building-up, but towards the end of a run, the filling-out of stuffing material from the erosions in the brickwork are frequently complicated. Hand plugging of the taphole is seldom satisfactory except in the smallest types of blast furnaces, and for this reason automatic stopping machines have been designed. A cylinder containing the charge of stopping material is connected with a mechanical locating device, and permits the stopping operation to be repeated without risk, any number of times.

When the control is actuated, a pusher piston forces this material from a funnel into the cylinder chamber, using a stop-slide, located between the ram and the mouthpiece. The control piston automatically operates this slide, and represents an important feature of the unit. In moving the machine into position in front of the taphole, the locating mechanism provides parallel motion guides both in the horizontal and vertical planes. The slewing cylinder turns the small jib, and the machine is guided into position in front of the taphole in the positive manner. Inclined positions

can be adjusted to suit the slope angle of the taphole by means of turn buckles, and the nozzle of the machine is pressed into place by the action of the cylinder, functioning over the shaft upon a forked lever.

Briefly, compressed air first actuates the pressure piston, thereby raising the throttle slide and freeing the way for the passage of plugging material, and the contents usually suffice in one operation to close the taphole. Where the brickwork behind the taphole is badly eroded, it is not enough to close the taphole, but repairs must be made to this portion which has been eaten away. A repetition of the stopping operation several times is then necessary, but can be performed without danger. Thin places, which are found by piercing the front of the furnace in the vicinity of the taphole, are likewise attended to. One small feature here is that it is, of course, necessary to avoid forcing the plugging material suddenly through the taphole, and it must be pushed through slowly, and be thereby caused to mushroom in the blast furnace interior.²

POSSIBLE WIDER APPLICATION OF SIGNAL BOARDS

Although the use of signal boards has so far chiefly related to iron blast furnaces, they have already been visualized for large copper and other non-ferrous smelting hearths. This comprises a sheet-iron rectangular box, with a series of panels of ground glass, whereby the furnace chargehand has a current check on the charging, and the action of the plant. The cabinet is purposely made two-fronted so as to be visible from either side, and takes the form of a luminous signal board. Arrows are illuminated on the "up" and "down" journeys of the loads of ore and coke, etc., using coloured lamps. Two sets of lamps are for two sounding rods, which visualize the level of the burden in the hearth, and the measuring range of which extends 6 ft. upwards, using both blue and red lamps. The latter only appear as a danger signal demanding immediate re-charging, while a series of 8 lamps show the different positions as the material is charged.

Corresponding lamp signals are used to denote the position of the coke in another section of the panel, and in some instances both a first and second depth indicator is employed. Other signals are used to indicate tapping, or when the furnace has been stopped for repairs, a "finish" lamp to show the end of the charging cycle, and a further indicator to reveal when what is termed a "slow-furnace" has to be dealt with.

There is little doubt that some of the refractory nickel chrome ores which were proverbial in their manner of sticking in the hearth could have benefited by a signalling arrangement of the kind, since a change in the charging procedure usually only took place after a noticeable slowing down had developed. The work of the automatic luminous signal board is sometimes amplified by use of a paper strip chart for recording purposes.³

Practical handling of the converter in its different

capacities has revealed that the best engineering methods are not always used, i.e., to meet the best blowing and slagging requirements.

An infallible, delicate, and easy control is necessary from the control gear, and it has to permit of quick travelling when tipping and righting the converter. This is particularly so in respect of short after-blows, besides quick and easy reversing from one travelling direction to the other, when pushing off the slag which adheres to the lip section.

When slagging the material, it is likewise possible, with the best control gear, to obtain almost imperceptible, slow, fine movements, thereby preventing losses, and reducing the toppings and slag clods to a minimum. One improved arrangement of hydraulic gear is simply constructed to permit of easy accessibility, with sleeves which have a lengthy span of life, and ensure tight closing even after extended periods of service.

The speed of the plant can be regulated from the slowest to the quickest movement, by graduating the number of power water ports in the guide bushes of the control piston sleeves. This arrangement comprises a main control and an auxiliary control working on a common piston rod, both of which are alike and only differ in size, and permit the most delicate handling. Not a few of the manually operated small nickel converters caused losses of time, bad slagging conditions from the aspect of the attendant and his safety, and imperfect removal of the slag. By installing a check valve, as the control gear closes absolutely tightly, should there be contingencies such as a failure of the power water, or bursting of a pipe, unintentional pouring out of the molten charge is forestalled.⁴

CONTINUOUS RECORDING OF GAS COMPOSITION

The gases emitted from blast furnace practice have been the subject of intensive researches, particularly in respect of the sulphur content, which for many years depended for its recovery on the use of scrubbers and wet condensing arrangements, but it took long years to make a success of electric purifying plants. As regards the dust in the gases, modern arrangements of filter units claim to reduce this below .1 oz. per 1,000 cu. ft. This is after the coarse dust particles have been removed in dust traps located close to the blast furnaces. Continuous recording of the carbon dioxide, carbon monoxide, and hydrogen contents, act as a good check on conditions within the hearth, particularly as the temperature is simultaneously recorded. Where the cooled flue gases are allowed to flow through a pipe containing a heated wire stretched through its axis, the heat then generated in the wire is transmitted to the walls of the pipe by radiation and convection. The temperature of the wire drops at a rate varying for gases of different heat conducting properties as a consequence.

As carbon dioxide has a materially different conductivity from the other flue gas constituents, a resistance measurement of the temperature of the wire conveniently and accurately determines the content of this gas. As it is necessary to make allowance for temperature fluctuations of the gas, this is readily effected by employing a second exactly equal wire in a second chamber filled with air, and the temperature difference between the two wires is measured. Using a thin platinum wire, which is kept taut by a spring, and which is passed centrally through each of four bores, using bridge connections, and a filter to prevent fouling by particles of solid matter, measurements can be continuously obtained. A battery, ammeter, and regulating resistance, serve for introducing heating current into the wires, while readings are taken from a galvanometer, and a recorder connected in parallel with the latter.

For the carbon monoxide and hydrogen contents, use is made of a glowing wire and oxygen, and at a certain tem-

perature of the wire, combustion takes place. Although this degree is very high with ignoble metals, where it corresponds to the temperature of combustion of the gases, combustion in the case of platinum and certain other metals, takes place already at much lower temperatures. This relates to from 400 deg. to 450 deg. C. and hence far below red heat, and the process of combustion causes a rise in the temperature of the wire in proportion to the content of combustible ingredients. In turn, this induces a change in the resistance of the wire, again measured by means of a bridge, in many respects similar to the carbon dioxide recorder.⁵ By removal of the carbon monoxide, the same test gives hydrogen alone, or rather the hydrogen gases.

This continuous analysing is done in conjunction with temperature recording, using iron-constantan couples with steatite couplings, while a separate recorder, previously referred to, tabulates the sulphur dioxide contents.

Lastly, reference is made to blast furnace water jackets made of tungsten-iron, which were tried out some years ago in place of the normal iron or steel jackets, and which idea hailed from experiences in the sugar refinery.⁶ Improvements are also claimed to have been attained in the construction of castings for blast furnaces, tuyeres, coolers, and plates for copper smelting purposes.⁷

Likewise developments have been made in the furnaces and converters used in the smelting and refining of copper-nickel mattes from different ores, which have been described elsewhere.⁸

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- ² Zimmermann and Jansen, Duren.
- ³ Siemens, and Demag, Duisburg.
- ⁴ Demag, Duisburg.
- ⁵ K. Trott, Pforzheim.
- ⁶ Franklin Sugar Refining Co., Philadelphia, Pa., U.S.A.
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Germanium in British Coals

The low proportion of germanium in coals from the South Wales coalfield suggests that the germanium content of coals may be related to rank. This possibility was examined at the Fuel Research Station for a set of samples taken from the Nine Feet Seam, South Wales, covering a range of rank. The results obtained are given in *Fuel Research, 1953*. They afford no evidence that any such relationship applies to the coal of this seam.

On the other hand, an examination of the analytical data for 150 different British coals suggested that some type of relationship might exist between germanium content and rank. Coals of lower rank show a tendency to contain larger amounts of germanium than those of higher rank.

The coals examined at the Fuel Research Station were divided into three groups, depending on the volatile matter content on a dry, ash-free basis. The results are shown in the following table, the average values quoted being the geometric means.

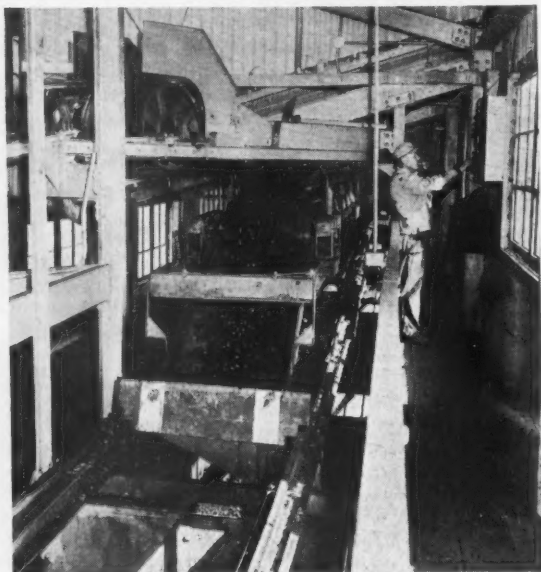
Volatile matter per cent (d.a.f.)	Germanium, p.p.m.		
	Minimum	Maximum	Average
below 20	0.3	8	0.9
20-30	0.4	5	1.9
above 30	0.3	60	5.6

In interpreting these figures, the effect of the predominance of coals from South Wales in the groups representing the higher rank coals should not be overlooked. However, if the commonly accepted view is correct, that much of the germanium in coal has been absorbed from percolating mineral solutions, these results could be ascribed to the higher porosity to such solutions of coals of low rank as compared with those of intermediate rank.

Push-button Colliery Loading

Relying heavily on sales to truckers, The Philadelphia and Reading Coal and Iron Company, America, planned that make-shift loading facilities should not exist at their new Oak Hill Colliery. The result of their engineering skill plus that of the A.R. Amos Company and of Barber-Greene Company, has resulted in a new two-man push-button operation, by which the trucker can draw, with virtually no effort, an exact weight of any of six common sizes of anthracite.

At the breaker, which is housed in a separate building, each of the six sizes are stored in individual bunkers of 60 and 80 tons capacity. Each bunker is equipped with an electrically controlled gate which, in its lowered position, doubles as a chute. Two 24 in. wide belt conveyors each serve three bunkers, or three individual sizes. One man supervises the transfer from the breaker to the truck loading pockets; when automatic indicators show that one of the truck loading pockets is running low, he presses a button and an additional supply is drawn from the main storage pocket.



The top floor of the retail plant showing the head of the two transfer belts discharging to the shuttle conveyor.

At the link between the breaker and the truck loading house, two 24 in. rubber belt conveyors are supported side-by-side in a 96 in. dia. A.R.M.C.O. corrugated metal pipe.

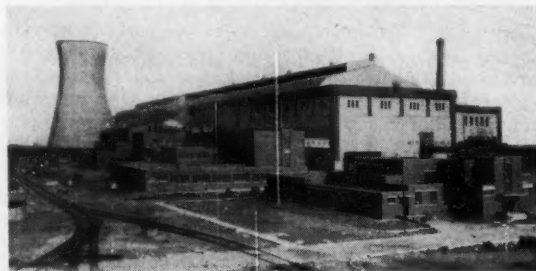
Once the coal has been carried to the truck loading structure it is deposited onto one of the two Barber-Greene shuttle conveyors, both of which are self propelled, and one of which is also reversible as to direction of belt travel. Push-button controls permit positioning each shuttle conveyor, which serves three pockets, so as to place the incoming coal in the right pocket. Having two parallel conveyors permits handling two sizes at the same time. At the bottom of each pocket is a Barber-Greene Model 75-F flight feeder.

Loading is entirely automatic. The chute is lowered into the truck to the right level by the operator, and the flight feeder revolves, delivering the coal at five tons per min.

Fractional tons can also be delivered with equal ease, since the tonnage dials are calibrated not only in tons, but in 1/10th of tons as well. The coal is washed over lip screens as it leaves the breaker, then is washed again, by sprays, as it is deposited into the trucks.

New Open Hearth Steel Plant

In the erection of their new open hearth steel plant at Lackenby, on the south bank of the Tees, Dorman Longs, the great steel colossus of the North-East Coast, have successfully discarded the theory that the cobbler should stick to his last.



The melting shop building has an annual capacity of 625,000 tons of steel.

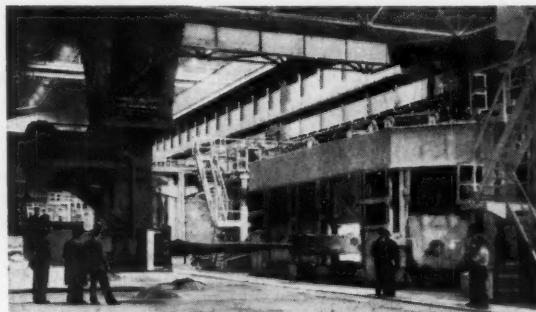
The whole of this gigantic project was conceived, designed and carried into execution by the company's own technical staff whose careful planning and sound workmanship have been vindicated by a complete absence of teething troubles since the five tilting furnaces and two 600 ton mixers were brought into operation.

The designed annual capacity of 625,000 tons of ingots has been substantially exceeded, and on a neighbouring site, work has already begun on the erection of a combined universal beam and heavy section mill which is the principal item in a further development scheme estimated to increase the company's post-war capital expenditure from £14,000,000 to a round £50,000,000.

FIRST OF ITS KIND IN THE U.K.

It will be the first of its kind in this country. Five such mills are in operation in the U.S. and the practical experience of the United Engineering Co., of Pittsburg, has been enlisted in the provision of some of the specialized equipment at a cost of some \$6,000,000.

But the new Dorman Long beam mill embodies new ideas in advance of any existing rolling practice which are being patented in Britain and America. The whole scheme of reconstruction is designed to raise the production of ingots from 1,850,000 to 2,300,000 tons and of rolled steel from



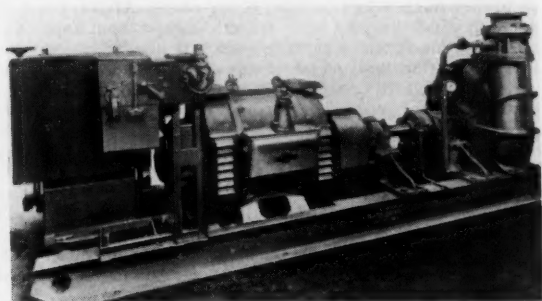
Charging scrap into one of the 600 ton mixers.

1,500,000 tons to 1,900,000 tons. It includes the construction of two new blast furnaces bigger than any now operating in this country, a new coke oven plant with a capacity of 15,000 tons a week, and new blooming, medium section, and rod and bar mills.

MACHINERY AND EQUIPMENT

Motor Driven Gravel Pumps

The hydraulic mining of tin is an operation in which powerful jets of water from monitors wash the earth containing the tin-ore from the hillside to a sump. A centrifugal gravel pump then transfers the slurry to a sluice, which separates out the tin deposit.



A sledge mounted pump-and-motor unit for tin mines

As the position of the sump is continually changing, Easton and Johnson Ltd. have evolved a sledge-mounted pump-and-motor unit, which can be dragged across rough ground. The electrical equipment is manufactured by Metropolitan-Vickers Electrical Co.; the motor is a 60 h.p. 485/290 r.p.m. type RW slipping machine, and the control gear consists of a type OSS oil-break stator switch and a type LF liquid rotor starter. Five of these units were recently shipped to Nigeria.

Coal Gasification Experiment

Basic studies to assess cost factors and determine the industrial significance of burning unmined coal to produce gas were recently recommended to the U.S. Bureau of Mines after scientists, representing American industry, the government, armed services, and educational institutions, were told that the results of a joint experiment by the Alabama Power Company and the Bureau at Gorgas, Alabama, had surpassed expectations. This experiment was described briefly in *The Mining Journal* of August 21, 1953.

The coal was burned out clean without wastage. The shale roof, made plastic by intense heat exceeding 2,300 deg. F., expanded and folded down gradually to occupy the space left by the consumed coal. Air needed for combustion continued to flow, however, between the rock-coal interface. The roof-rock or shale was particularly favourable for underground gasification, swelling to two or three times its original volume and still maintaining sufficient strength to hold up the overburden and prevent subsidence.

After the fire was extinguished, temperatures still exceeded 200 deg. even after steam was forced through the mine for five days and water for eight days in an effort to cool it.

In driving adits and a bulldozer trench into the mine after the fire was extinguished, the workers in turn encountered intact coal, slightly carbonized coal, coke, fused clay from bags which had been stacked along the tunnel to confine the flames, and then the folded and expanded roof material over a thin bed of ashes where the coal had been burned out completely. Belgian authorities hold that roof conditions and the use of pulsating air current are keys to success.

Outlining a possible future course for research, Dr. W. C. Schroeder, chief of the U.S. Bureau of Mines' Office of Synthetic Liquid Fuels, said that any future experiments should approach a commercial-size operation encompassing perhaps 200 to 300 acres of coal land. As one method of attack to minimize initial mining costs, he proposed a development plan involving the drilling of boreholes from the surface and the burning of the coal bed between them. Underground coal

gasification experiments have been pioneered by the Russians, but although the U.S. Bureau of Mines has made several attempts to arrange for an American engineering team to study the operations in Russia, it has not been successful to date.

A New Exhibition

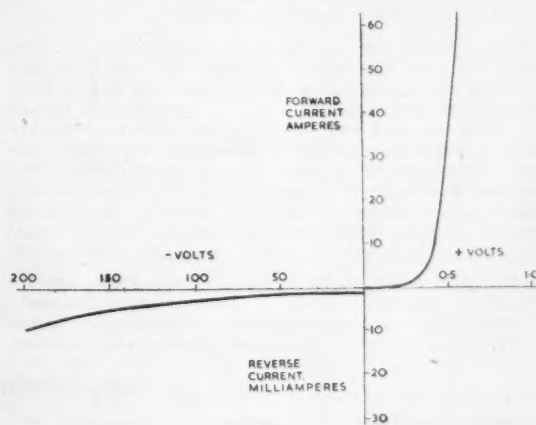
On Wednesday of this week The Production Exhibition and Conference closed at the National Hall, Olympia, after a display lasting a week. Under the patronage of H.R.H. The Duke of Edinburgh, the exhibition was the first of its kind to tell the story behind the factory products of the United Kingdom. It was sponsored by the Institution of Production Engineers.

The purpose of the exhibition was to portray productivity in all aspects, and the general theme of the attendant convention was that the basis of productivity is research. It is hoped that the exhibition will become a regular biennial event, and it is significant that among those manufacturers displaying this year were more than a dozen whose products have applications within the mining industry.

A Germanium Power Rectifier

A germanium-type rectifier rated at 300 kW., 1,100 amps., as far as is known the first application of germanium on this side of the Atlantic to the problem of power rectification, was put into service last year by the British Thomson-Houston Co. The new rectifier thus enters a field normally covered by mercury vapour devices or rotating machinery.

The germanium rectifier equipment is capable of carrying currents far heavier than anything previously achieved, and the value of the current obtainable from a germanium cell has been stepped up from a fraction of an amp. to 50 amps. The equipment is capable of rectifying 1,100 amps. at approximately 270 volts. It operates on an electrolyser and has been in practically continuous service since the third week in December, 1953, on loads varying up to its maximum rating. The efficiency of this equipment is 98.5 per cent and it is likely that subsequent equipments will show a better performance.



Characteristic of the G.J.P. power rectifier at 20 deg. C.

Day to day experience with this first successful unit is being recorded; but it should be realized that before the use of germanium on a wide scale for power rectifying devices can be accomplished, a great deal more work remains to be done.

The current/voltage characteristic curve of a 50 amp. rectifier unit built in the BT-H Research Laboratory is illustrated. It will be noted that at currents of 50 amps. the voltage drop is less than 1 volt.

METALS, MINERALS AND ALLOYS

COPPER.—The price of copper in the near future is likely to be determined more by the outcome of current labour negotiations in Chile than by any other factor. The strikes threatened at Chuquicamata, Potrerillos and El Tiente have now been postponed twice at the urgent request of the Chilean Government. The Central Bank of Chile has twice in a week raised by $\frac{1}{2}$ c. per lb. the price of electrolytic refined copper f.a.s. Autogasta and is now asking from European consumers 29 $\frac{1}{2}$ c.; this is equal to 30 $\frac{1}{2}$ c. New York although Chilean production is still sold there at 30 c. Whether this is a fair reflection of the current tightness of nearby copper is a matter of opinion (the present critical state of the Chilean Treasury is probably not unrelated), but it is clear that any disruption of supplies by strike action would have serious consequences. Shipments of Chilean copper in the first half of 1954 were at more than twice the rate of the second half of 1953. Even without further labour troubles there is no obvious reason why the present tightness should not continue for some time yet. The *Wall Street Journal*, however, has recently expressed the belief that supplies may ease appreciably toward the end of the year as a result of new mine capacity. Kennecott Copper's Braden mine has now returned to a six-day week, as have Chuquicamata, Potrerillos as well as certain American mines. In addition, Anaconda's Yerington mine, Nevada, which began production in November is now at its capacity rate of 2,500 tons a month; American Smelting and Mining Co.'s new Silver Bell mine, Arizona, will soon reach its capacity rate of 1,500 tons a month; Phelps Dodge's Lavender pit orebody will start up this month; Miami Copper Co.'s new Copper Cities mine will start in August and will work up to 1,900 tons a month; and Copper Range Co.'s White Pine mine, Michigan, is to start in November with an initial rate of 3,125 tons a month.

LEAD.—Lead continues dull and featureless. Hopes of an early direction from the Office of Defense Mobilization to the General Services Administration on stockpiling policy have now receded. It is now felt that the direction will be delayed till Congress has acted on the Administration's request for \$380,000,000 for stockpiling. Stocks of lead at American smelters and refiners were virtually unchanged during May according to the Bureau of Metal Statistics; consumers' stocks during April had, however, increased. American mine output declined in May by 6 per cent over April. Meanwhile it was announced that the Tooele, Utah, refinery is to close indefinitely because of what its manager has described as "deplorable conditions in the lead-zinc ore mining industry."

TIN.—On both sides of the Atlantic tin dealings have been steady and those interested in the metal will have been more concerned with doings outside the markets. The Interim Committee of the International Tin Council concluded its meeting in London this week and, when it meets again in September, will be enlarged to include all the signatories to the draft agreement. This is generally assumed to mean that decisions of real substance will be taken in September and the Committee will then be asked to endorse the work done hitherto. If signatories ratify the agreement before this meeting then there is no reason why it should not be put in operation in October or November.

The annual report of the Billiton Company shows how the concern is gradually moving its interests from Indonesia. Whereas Billiton once operated solely in Indonesia, at the end of 1953, 80 per cent of available capital was invested elsewhere.

Canada, Uganda and Southern Rhodesia are among the countries which Billiton is now operating or prospecting. On the other hand, the results of the two Indonesian affiliated companies were described as very satisfactory although the continuing inflation in Indonesia was causing costs constantly to rise.

Meanwhile, the American Joint Congressional Committee on Defense Production has begun an investigation into the affairs of the tin mine near Lost [sic] River of the Alaska Tin Corporation which has had large federal loans without apparently producing much tin. The mine (which is only about 50 miles from Soviet territory) could, it was originally thought, be put into operation for about \$10,000; later \$250,000 was sought for roads, buildings, water and so on; ultimately \$3,000,000 was spent. The *American Metal Market*, on the basis of the only recorded sales in two months of this year and using their then New York price of Straits tin as a guide, has calculated the total output at about 20 to 25 tons which, it adds, for a cost of \$3,000,000 works out at \$67 per lb. So far only Government witnesses have been heard and the Alaska Tin Corporation has yet to have its say but, should the story continue as it has begun, the repercussions could be considerable especially when, next year, the future of the Texas smelter comes up again for consideration.

ZINC.—The only relief offered to the zinc market in New York was the news that in June domestic consumers took 10,400 more tons than in May and at 72.257 tons took the largest delivery since June of last year. As a result, producers' stocks actually fell but they are still at a depressing level and although smelter production was down, June was a short month and the daily rate was actually up. In the first half of the year smelter production fell by 53,700 tons but deliveries of all kinds fell by 64,000 tons. Thus, the fact that O.D.M. has not yet given G.S.A. a stockpiling directive is not of any great moment since it is now generally felt that something more drastic than any conceivably likely stockpile purchases will be necessary to revive the industry.

SILVER.—The silver market, which has been showing little resistance to increased supplies, declined sharply this week with the result that cash and forward prices at 72 $\frac{1}{2}$ d. and 72d. per oz. respectively fell to their lowest levels for over three years before closing the week at 72 $\frac{1}{2}$ d. and 72 $\frac{1}{2}$ d. respectively. The main influence in the market has been sales of Russian silver arising from "barter" agreements. Although it is understood that supplies coming on to the market on Russian account have not been large they have been more than sufficient to satisfy the normal demand for essential purposes and this, together with the fact that Continental buyers who usually look to London for their supplies have been able to obtain Russian silver, has weakened the London price. Mocatta and Goldsmid in their recent circular, report a useful demand for silver from Aden for the minting of Maria Theres Thalers. Substantial quantities of these have been coined and market requirements there, it is reported, have been largely satisfied.

QUICKSILVER.—The announcement that an economic and technical mission from the United States is expected to arrive in Italy shortly primarily for the purpose of concluding an agreement aimed at increasing Italian quicksilver production, focuses attention on the extremely difficult trading conditions prevailing in this market. Spot supplies are very scarce indeed,

U.K. PRIMARY METAL STATISTICS—APRIL
(long tons)

	Refined Copper			Lead†			Slab Zinc			Tin metal		
	April 1954	Jan.-Apr. 1954	Jan.-Apr. 1953	April 1954	Jan.-Apr. 1954	Jan.-Apr. 1953	April 1954	Jan.-Apr. 1954	Jan.-Apr. 1953	April 1954	Jan.-Apr. 1954	Jan.-Apr. 1953
U.K. stocks beginning period.....	38,041*	37,246*	91,548*	28,312*	26,887*	23,098*	40,710*	27,652*	166,050*	2,598*	3,085*	4,225*
Imports.....	23,240	80,384	73,985	15,797	67,606	49,525	14,968	62,939	73,778	691	1,107	783
Production.....	11,865	47,944	35,085	6,125	20,430	22,771	6,079	26,534	23,117	2,696*	8,826*	7,325*
Consumption.....	30,196*	134,873*	82,895*	19,317	81,636	72,693	19,082	77,285	58,271	1,702	7,025	6,450
Exports and Re-exports.....	2,395	11,243	356	527	6,913	9,126	41	660	127	341	2,781	3,083
U.K. stocks end period.....	45,501*	45,501*	120,059*	30,005*	30,005*	17,144*	38,953*	38,953*	30,821*	4,065*	4,065*	3,355*

(Source: British Bureau of Non-Ferrous Metal Statistics)

*Estimated by International Tin Study Group. †Includes imported virgin lead and English refined from domestic ore and secondary metal. ‡In addition U.K. stocks of blister copper at the end of April were 14,617 tons; of zinc concentrates were 32,517 tons, and of tin ore were 2,909 tons. §Including any Government stocks other than strategic reserves. ¶Excluding Government held stocks. ††Includes copper refined from secondary metal.

and no early amelioration of this position is looked for. The London warehouse quotation for quicksilver this week rose to £100 per flask, a fresh peak and one which compares with approximately £70 per flask a year ago. In the United States there is a serious shortage, in spite of large official imports, and it is believed that the U.S. authorities have contracted for a large part of the world's output during the current year.

The announcement last week that the U.S. intended to purchase around 200,000 flasks of U.S. and Mexican produced quicksilver by the end of 1957 at a guaranteed floor price of \$225 per flask has prompted the enquiry as to whether demand has been shored up by the atomic energy programme requirements.

WOLFRAM.—A little more life has been flowing back into the wolfram market in the last few days. Interest has hardened with some extension of buying enquiries and the U.K. selling price was raised to-day by 5s. to 160s. per unit for wolfram and for scheelite.

Iron and Steel

For very many years the British iron and steel industry has enjoyed almost complete immunity from labour disputes. But this fact serves only to throw into sharper relief the strike of the coke oven workers at Port Talbot which has already involved the stoppage of two giant blast furnaces and many of the steel furnaces also. Should the strike be prolonged it is estimated that 7,000 steel workers will be thrown out of work by the week-end.

This is a serious matter, as the demand for steel is strong and insistent, and in other areas the beginning of the holidays has had an adverse effect on production. Fortunately, stocks of iron and steel have been raised to a high level and will provide a useful cushion until production is back to normal.

An awkward bottle neck is developing in regard to pig iron supplies. Foundrymen are still able to acquire No. 3 foundry grade without much difficulty but basic, haematite, and low and medium phosphoric grades are scarce and may become scarcer still as several blast furnaces have been laid idle for repairs.

Ample supplies of billets, blooms, sheet bars and slabs are now available from home sources, and a better flow of overseas orders has restored the bar re-rolling mills to full-time working. A better demand for mill rods and ferro concrete bars has also developed, whilst Commonwealth and foreign buyers are readily paying the export premiums charged for black and galvanized sheets.

The heavy section and rail mills are amply provided with specifications and if the plate mills have overtaken current requirements except for plates under $\frac{1}{2}$ in. thickness, they are still working to the limit of their capacity and are beginning to make a contribution to the rising total of steel exports.

It is announced this week that the Tees-side engineering firm of Ashmore Benson Pease and Co. Ltd. has received a £2,000,000 contract for the construction of a giant blast furnace, hot blast stoves, and an ore transporter bridge for the new Colville steel plant at Motherwell.

The London Metal Market

(From Our Metal Exchange Correspondent)

With the price of tin in the middle range envisaged by the International Tin Agreement, and with America now having absorbed the visible surplus of metal until March of next year, the Interim Committee of the International Tin Council which met in London this week was able to move slowly, and has decided to hold a further meeting in September to include representatives of all those governments who have signed the Agreement. This meeting will consider the election of officers and the laying down of rules of procedure. In the meantime, demand for tin remains satisfactory and prices show little signs of receding. On Thursday morning the Eastern price was equivalent to £765½ per ton c.i.f. Europe.

The lead and zinc markets have developed a slightly easier undertone, largely owing to seasonal falling off in demand and the fact that further purchases for the American stockpile are likely to be delayed for some weeks.

The copper market remains extremely steady with continental demand good and that in America excellent. On Wednesday the Chairman of the Committee of the Metal Exchange announced that it had been agreed in principle that the Standard Contract should be altered to a warrant basis, but that a few weeks must yet elapse before the final form of contract is passed and its date of coming into operation made known. This alteration is one which has a lot of support on the Exchange and for which many people have been agitating ever since the Copper Market opened, but without knowing the actual clauses of the contract it is difficult to express an opinion as to the likely effects of its introduction.

Closing prices and turnovers are given in the following table:—

	July 8		July 15	
	Buyers	Sellers	Buyers	Sellers
Tin				
Cash.....	£758	£759	£762	£764
Three months.....	£746½	£747	£753	£754
Settlement.....	£759		£764	
Week's turnover.....	445 tons		400 tons	
Lead				
Current month.....	£96½	£97	£96½	£96½
Three months.....	£94½	£95	£94½	£94½
Week's turnover.....	2,150 tons		2,525 tons	
Zinc				
Current month.....	£78½	£79	£78	£78½
Three months.....	£79½	£79½	£78½	£78½
Week's turnover.....	3,650 tons		4,275 tons	
Copper				
Cash.....	£239½	£239½	£239½	£239½
Three months.....	£237½	£237½	£237½	£237½
Settlement.....	£239½		£239½	
Week's turnover.....	2,950 tons		4,025 tons	

OTHER LONDON PRICES — JULY 15

ANTIMONY

English (99%) delivered, 10 cwt. and over	£210 per ton
Crude (70%)	£200 per ton
Ore (60% basis)	22s./24s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade)	£483 per ton
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OTHER METALS

Aluminium, 99.5%, £156 per ton	Osmium, £50 oz. nom.
Bismuth	Palladium, £7 10s. oz.
(min. 2 cwt. lots) 16s. lb.	Platinum, £30/£31
Cadmium (Empire), 12s. lb.	Rhodium, £42 oz.
Chromium, 6s. 5d./7s. 6d. lb.	Ruthenium, £22 10s. oz.
Cobalt, 20s. lb.	Quicksilver, £100
Gold, 248s. 11½d. f.o.z.	ex-warehouse
Iridium, £45 oz. nom.	Selenium, 35s. 9d. nom.
Magnesium, 2s. 6d. lb.	per lb.
Manganese Metal (96%-98%)	Silver 72½d. f.o.z. spot and
£225/£262	72½d. f'd.
Osmiridium, £40 oz. nom.	Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC.

Bismuth	20% 3s. 3d. lb. c.i.f.
	50% 7s. 3d. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (lumpy)	£13 12s. per ton c.i.f.
Refractory	£13 4s. per ton c.i.f.
Magnesite, ground calcined ..	£26-£27 d/d
Magnesite, Raw	£10-£11 d/d
Molybdenite (85% basis) ..	102s. 4d.-103s. per unit c.i.f.
Wolfram (65%)	World buying 150s.-155s. nom.
"	U.K. Selling 160s. + 10s.
"	charges
Scheelite (65%)	World buying price nom.
"	U.K. Selling 160s. + 10s.
"	charges
Tungsten Metal Powder ..	14s. 11d. nom. per lb.(home)
(98% Min. W.)	
Ferro-tungsten	11s. 11d. nom. per lb.(home)
Carbide, 4-cwt. lots	£37 6s. 3d. d/d per ton
Ferro-manganese, home	£54 15s. 0d. per ton
Manganese Ore Indian c.i.f. Europe	
(46%-48%)	70d./75d. per unit nom.
Brass Wire	2s. 6½d. per lb. basis
Brass Tubes, solid drawn ..	1s. 10½d. per lb. basis

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

Last week's buoyant conditions in the gilt-edged market were accentuated during the current period. The move towards cheaper money conditions, the improved export figures for the first half of 1954, and the growing confidence in sterling abroad, have all made their due contribution. In addition, the overall revenue deficit to date is some £32,000,000 less than for the same period last year. The result of this was a great increase in turnover and activity, with some speculative buying of undated loans which found the market short of stock.

Kaffirs generally marked time pending the issue of the quarterly reports, some of which have been released as we go to press. Business in London and Johannesburg was quiet, but the undertone remained firm. Seasonal influences have checked the rise in the Rand labour force. The June figures fell against May, but remained considerably higher than for the comparable period last year.

Finance houses again encountered investment demand and rises were recorded by Anglo American Corporation, Johnnies, Union Corporation, and companies allied to Anglo American. It is interesting to note that Anglo American and Johnnies may well have to underwrite the new issue of Freddie Consols £1 shares to be issued at par. The present market price is around 19s.

Individual mines were rather mixed. Stilfontein rose sharply in the early part of the week on continental demand but eased later. Elsewhere, apart from an improvement in Blyvoors, the coming quarterlies overshadowed the market.

Activity was more pronounced in the Orange Free State section, but here gains were mostly confined to recent market favourites. The two President mines and Welkom recorded useful advances. Western Holdings were also good and the gain here was attributed to hopes of good development results from the drive towards the Free State Geduld boundary. Rich borehole results were originally obtained in the latter's property. Free State Geduld, however, encountered selling and the price

of the shares fell.

West Africans were very quiet and the market showed no response to the results from Amalgamated Banket or to the big improvement in the Bremang profits for June.

Great interest was displayed in the West Australian market, due to the current move towards consolidation. Boulder Perseverance remained unchanged, but both the big concerns of Gold Mines of Kalgoorlie and Lake View and Star hardened. In addition there has naturally been speculation whether North Kalgurli will be included at some later date. The property is sandwiched between Gold Mines of Kalgoorlie, Lake View and Star and South Kalgurli, and adjoins Boulder Perseverance.

Diamond shares were strong. The good prices obtained for gem stone sales were encouraging and the shares again advanced sharply. The market was impressed by the fact that although some 75 per cent of the stones sold go to the United States, the trade recession in that country at the beginning of the year has apparently had little effect upon demand. Gem stocks at the mines are now at an irreducible minimum and demand must be satisfied by output.

Coppers were good. The removal of Chilean stocks, which had been overhanging the market, and the continued demand for the metal, proved most encouraging. Selling of Chartered in Paris was easily absorbed by investment demand in London and the shares rose. All other leaders were also up, except Rio Tinto which met with some profit-taking.

Publication of the Malayan tin output figures put many of the leading shares better.

Nigerian tins were little changed, but there was a noticeably firmer trend. Bisichi proved disappointing. Despite the better figures and dividend the shares remained unchanged.

Lead/Zincs were rather erratic and featureless. The metal prices turned easier during the week. Mount Isa's first uranium test proved disappointing.

FINANCE	Price July 14	+ or - on week	O.F.S.	Price July 14	+ or - on week	MISCELLANEOUS GOLD (contd.)	Price July 14	+ or - on week	TIN (Nigerian and Miscellaneous) contd.	Price July 14	+ or - on week
African & European ..	2 1/2	+	Freddies ..	19/4	-4 1/2	St. John d'el Rey ..	18 1/2	+	Geovort Tin ..	11/9	+4 1/2
Anglo American Corp'n ..	7 1/2	+	Freddies Consolidated ..	41	-1 1/2	Zams ..	37/9	+3d	Gold & Base Metal ..	2/104	xd
Anglo-French ..	22/6	+	F. S. Geduld ..	12/41	-1 1/2				Jantar Nigeria ..	9/3	+3d
Anglo Transvaal Consol. ..	23 1/2	+7 1/2d	Geoffries ..	34/6	+3d	DIAMONDS & PLATINUM			Jos Tin Area ..	13/-	-
Central Mining (El shrs.) ..	35/3	+9d	Harmony ..	16/9	+3d	Anglo American Inv. ..	6 1/2	+ 1/2	Kaduna Prospectors ..	2/3xd	-1 1/2d
Consolidated Goldfields ..	36/6	+9d	Loraine ..	10/9	+3d	Casts ..	27/-	+3 1/2	Kaduna Syndicate ..	2/3xd	3d
Consol. Mines Selection ..	3 1/2	+1 1/2d	Lydenburg Estates ..	10/9	-	Cons. Diam. of S.W.A. ..	6	+	London Tin ..	3d	+1 1/2d
East Rand Consols. ..	2/10 1/2	-1 1/2d	Merriespruit ..	13/6	-3d	De Beers Fid. Bearer ..	5 1/2	+	United Tin ..	3/-	+3d
General Mining ..	3 1/2	+	Middle Wits ..	60/3	+3d	Pots Platinum ..	9/3	+			
H.E. Prop. 5/- Shares ..	10/3	-3d	Ohits ..	63/9	+1/3	Watervaal ..	15/6	+	SILVER, LEAD, ZINC		
Henderson's Transvaal ..	44/9	+1/6	President Brand ..	33/6	+1/3				Broken Hill South ..	48 1/2	+1 1/2d
Johnnies ..	34	-3d	President Steyn ..	26/44	-4 1/2d	COPPER			Burma Mines ..	35/3	+3d
Rand Mines ..	3 1/2	-3d	St. Helena ..	12/10 1/2	+1 1/2	Chartered ..	80/-	+3d	Consol. Zinc ..	7/6	-6d
Rand Selection ..	39/9	+1/6	Virginia Ord. ..	20/3	+1 1/2	Espananza ..	6/9	+4 1/2	Lake George ..	44-4xd	-1 1/2d
Strathmore Consol. ..	28/9	+1/3	Welkom ..	4 1/2	+	Indian Copper ..	4 1/2	-6d	Mount Isa ..	27/9	+6d
Union Corp. (2/6 units) ..	30/6	+1/6	Western Holdings ..	9 1/2	+	Messina ..	9 1/2	-6d	North Broken Hill ..	65/-	+9d
Vereeniging Estates ..	4 1/2	+				Nchanga ..	73/-	+7 1/2d	Rhodesian Broken Hill ..	10/104	-9d
Writs ..	35 1/2	+1 1/4	WEST AFRICAN GOLD			Rhod. Anglo-American ..	13 1/2	+7 1/2d	San Francisco Mines ..	4/44	+1 1/2d
West Wits ..	40/6	+6d	Amalgamated Basket ..	1/41		Rhod. Katanga ..	19/44	+3d			
			Ariston ..	6/11	-3d	Rhodesian Selection ..	23	+	MISCELLANEOUS		
RAND GOLD			Ashanti ..	18/9	-3d	Rhokana ..	33	+	BASE METALS & COAL		
Blyvoors ..	33/3	+1/6	Bibiani ..	4/3	-	Rio Tinto ..	18/3	+7 1/2d	Amal. Collieries of S.A. ..	45/-	+6d
Brakpan ..	6/104	-1 1/2d	Bremang ..	1/9	+1 1/2d	Roan Antelope ..	41/3	+7 1/2d	Associated Manganese ..	47/6	+6d
City Deep ..	15/-	-9d	G.C. Main Reef ..	6/11	-	Selection Trust ..	93/9	+3 1/2	Cape Asbestos ..	25 1/2	+1 1/2d
Consol. Main Reef ..	37/6	-9d	W. Selection & Dev. ..	2/3	-	Tanks ..	57/6	+	C.P. Manganese ..	41 1/2	+7 1/2d
Crown ..	3 1/2	-9d	Konongo ..	1d	-	Tharsis Sulphur Br. ..			Consol. Murchison ..	47/-	+4 1/2d
Daggas ..	22/6	-9d	Marlu ..	9d	-				Mashaba ..	3d	-
Dorsonfontein ..	28 1/2	-6d	Taqah & Abosso ..	2/-	-	TIN (Eastern)			Natal Navigation ..	5 1/2	-
Durban Deep ..	10/6	-				Ayer Hitam ..	26/-	-3d	Rhod. Montelloe ..	17/3	-
E. Daggas (4/- units) ..	25/9	-	AUSTRALIAN GOLD			Gopeng ..	8/6	-3d	Turner & Newall ..	83/9	+1 1/2d
E. Rand Props ..	3 1/2	-	Boulder Perseverance ..	7/-	-	Hongkong ..	7/104	+3d	Wankie ..	15 1/2	+7 1/2d
Geduld ..	11/-	-3d	Gold Mines of Kalgoolie ..	14/9	+3d	Ipo ..	15/9	+3d	Witbank Colliery ..	4 1/2	-
Govt. Areas ..	17/9	-3d	Great Boulder Prop. ..	9/3	+4 1/2d	Kamunting ..	3/104	+1 1/2d	CANADIAN MINES		
Grootvlei ..	10 1/2	-1 1/2d	Lake View and Star ..	19/9	+1 1/2	Kepong Dredging ..	10/3	-	Dome ..	52 1/2	+2 1/2d
Libanon ..	19/6	-	Mount Morgan ..	18/3	+9d	Kinta Tin Mines ..	27/3	+3d	Hollinger ..	52 1/2	+2 1/2d
Luijpaards Vlei ..	17/9	-1/3	North Kalgurli ..	8/9	+1 1/2	Malayan Dredging ..	12 1/2	+1 1/2d	Hudson Bay Mining ..	584	-
Marievale ..	13/-	-	Sons of Gwalia ..	5/6	+1 1/2	Pahang ..	7/9	+3d	International Nickel ..	57 1/2	+1 1/2d
Modderfontein East ..	15/-	-	South Kalgurli ..	5/9	+1 1/2	Pengkalen ..	16/104	+4 1/2d	Mining Corp. of Canada ..	254	+
New Kleinfontein ..	12/6	+3d	Western Mining ..	13/3xd	-6d	Siamese Tin ..			Noranda ..	5152	+
New Pioneer ..	59/3	-				Southern Kinta ..	17/73	+4 1/2d	Quemont ..	27 1/4	-3d
Randfontein ..	16/-	-3d				S. Malayan ..	24/3	+6d	Yukon ..	3/6	-3d
Robinson Deep ..	11/9	-3d	MISCELLANEOUS GOLD			S. Tronoh ..	9/6	-	OIL		
Rose Deep ..	34/9	-	Cam and Motor ..	8/6	-	Sungei Kinta ..	10/72	+1 1/2d	Anglo-Iranian ..	644	-
Simmer & Jack ..	19/44	-7 1/2d	Champion Reef ..	4/9	-	Tekka Taiping ..	6/-	-3d	Apex ..	54/44	+
S.A. Lands ..	3/14	+2 1/4	Falcon Mines ..	7/9	-4 1/2d	Tronoh ..	23/6	+6d	Attick ..	51/3	-1/3
Springbok ..	31/3	+2 1/4	Globe & Phoenix ..	25/9	-	TIN (Nigerian and Miscellaneous)			Burmah ..	81/104	-7 1/2d
Stibfontein ..	36/104	-7 1/2d	G.F. Rhodesian ..	5/3	+4 1/2d	Amalgamated Tin ..	14/44	+1 1/2d	Canadian Eagle ..	31/6	+3d
Sub Nigel ..	3	-	London & Rhodesian ..	4/4	-	Beralt Tin ..	25/-	-9d	Mexican Eagle ..	17/104	+7 1/2d
Van Dyk ..	3/3	-	Motapa ..	1/3	-	Hsiechi ..	6/3xd	+	Shell (Burmah) ..	51	+
Venterpost ..	11/9	-3d	Mysore ..	6/3	-	British Tin Inv. ..	16/6	+	Trinidad Leasehold ..	25	+
Vlakfontein ..	13/6	-3d	Nusdundroog ..	6/3	-	Ex-Lands Nigeria ..	3/1xd	+3d	T.P.D. ..	25/3	+3d
Vogelstruik ..	5/8	-	Oereugum ..	4/-	-				Ultramar ..	29/3	+
West Driefontein ..	48/9	-									
W. Rand Consolidated ..	46/3	-7 1/2d									
Western Refs. ..											

COMPANY NEWS AND VIEWS

Some June Quarterly Results

Those who were looking for exciting results from the June quarterly reports of the Rand and O.F.S. gold mines will not find much to whet their investment appetite in the results so far announced by companies in the Johannesburg Consolidated, Strathmore Consolidated and Union Corporation groups.

Received too late to permit of critical analysis or considered comment, the general impression created has been one of disappointment although when viewed against longer term trends this judgment may stand in need of some revision.

In any event, results announced by Stilfontein appear to reflect a lowered standard all round which was unexpected owing to the excellent monthly production and profit figures released during the June quarter. Ellaton Gold, despite a fall in the footage developed and in the in. dwt. value, announced its initial ore reserve position which at June 3 last was estimated at 414,141 tons averaging 9.14 dwt. per ton over a stoping width of 47 in.—figures which hold good promise for the future.

The Anglo American Corporation of South Africa group publish their results to-day.

Amalgamated Metal's Many Interests

It would be impossible to summarize in a few lines the present activities of the Amalgamated Metal Corporation together with its subsidiaries, The British Metal Corporation and Henry Gardner Co.; for in recent years the group has undertaken a policy of so progressive a nature that its present interests are infinitely more widespread than in pre-war years. Indeed, to-day, while base metal and rubber trading still remain the major activities, other interests have carried the group's influence far afield to Canada, Newfoundland, South Africa, the Far East and Australia. Moreover, the corporation's organizations in these countries embrace a wide field of general trading, the extent of which far from being limited to commodity dealing also includes smelting activities, prospecting and manufacture.

This extension of interests has, of course, stemmed from the large profits arising from the high price and production levels of base-metals during recent years. The group's profits have soared since 1947; while an indication of the increase in the volume of business can readily be seen from the figure of just over £5,000,000 which represented current assets in 1947 and which now has reached a level of almost £10,000,000. Furthermore, the latest group balance sheet figures disclose net liquid assets of nearly £4,000,000 of which £2,000,000 was represented by cash, government securities and tax reserve certificates.

The year 1953 was in many respects a difficult one for the group, for apart from the uncertainty experienced prior to the reopening of the London Metal Exchange, fears of a recession in the U.S.A. not unnaturally prompted buyers of metals to hold back their orders until the position became more clear. In fact, falls which took place in the prices of all commodities during the year must have presented the corporation with many difficulties. Yet in face of the consequent drop in profits made during the year, as compared with the previous period, the dividend on the ordinary issued capital of £4,435,792 in £1 shares was held at the previous year's figure of 8 per cent.

Year to Dec. 31	Group Revenue £	Tax- ation £	Net Profit £	Divi- dend £	To Reserve £	Carry Forward £
1953	878,402	513,440	364,209	224,875	NIL	1,378,405
1952	1,059,464	715,596	330,111	223,525	5,312	1,249,162

Regarding the future, Mr. W. Gardner, the chairman, in his statement to shareholders makes the comment that prospects for metals for the time being appear to be "surprisingly free of anxieties." In addition, there is room for optimism about the outlook for rubber. It is a fact that the present proportionate consumption of natural to synthetic in the United States is running at about half in half: this is a great improvement on last year's figures of 39 per cent and 61 per cent respectively. Furthermore, the current year's outlook for this commodity seems to indicate that supply and demand should be approximately in balance.

Public confidence in the corporation has been well demonstrated by the firmness of the ordinary shares which, over a long period, have remained remarkably steady. And while at their present level of about 20s. 6d. x.d. the very useful yield of 7½ per cent can be obtained it should be borne in mind that

apart from its undoubted attractions as a sound investment, the corporation has definite prospects for future growth.

Indian Copper Drops Dividend

A preliminary profit statement published by the Indian Copper Corporation discloses that during the year ended December 31, 1953, there was a substantial fall in net profits to a total of £74,600 from £121,833 previously. This figure was struck after providing for depreciation of £90,000 (£115,000), taxation of £171,382 (£265,347), together with a transfer to General Reserves of £75,000 (£185,000). A lower dividend at 10 per cent, tax free, was accordingly recommended as against 12½ per cent, tax free, previously paid on the company's issued capital of £914,200 in 2s. shares. This distribution required the provision of £91,420 against £114,275 in the preceding period. A balance of £76,278 was carried forward as compared with £93,098 previously. Meeting, Calcutta, September 8. Sir A. J. Elkins is chairman.

Freddies Proceed With New Issue

At the time of the recent amalgamation between Freddies North and South Gold Mines it was stated that funds for the essential future expansion of operations would be raised as soon as possible after reorganization had been completed. It is, therefore, announced that the proposed offer of 2,377,081 of Freddies Consolidated Mine's reserve shares of £5A.1 each for subscription at 20s. per share, payable in full on application, in the proportion of 17 new shares for 100 shares held will be put into effect. This offer which is expected to provide approximately £2,150,000 after deduction of amalgamation, issue and underwriting expenses will close on September 10, 1954.

Meanwhile, it is stated that work in connection with the expansion programme has been commenced and pending the receipt of share issue proceeds this has been financed by temporary loans from Johannesburg Consolidated Investment Company which to date amount to £500,000 and which will be repaid on completion of the share issue.

Great Western's First Year of Production

In a preliminary statement of profit issued by Great Western Consolidated it is disclosed that operations during the first full year of production to March 31, 1954, resulted in a net profit of £14,445 after meeting interest charges. After an amount of £9,379 had been written off and the profits set against the adverse balance of £11,800 a debit balance of £6,734 was carried forward. The announcement adds that as at March 31, 1954, total expenditure, plus the debit profit and loss balance, amounted to £2,772,536 which was £1,004,536 in excess of paid up capital.

Production at the mine during the year was 420,129 tons of ore milled from which 51,143 oz. of fine gold were recovered equivalent to an average grade of 2.43 dwt. per ton.

Attock Oil Increases Dividend

Figures from a preliminary profit statement issued by the Attock Oil Co. in respect of the year ended December 31, 1953, disclose that group profit for the year, after providing £847,097 (£683,019) for taxation, increased to £604,222 against £576,436 in the previous year. From this figure, however, an amount of £165,053 (£214,988) was deducted in respect of depreciation and a figure of £190,000 as against £160,000 in the preceding period placed to reserve. With the recommendation of a final dividend of 20 per cent on the company's issued ordinary capital of £1,800,001 in shares of £1 a total of 25 per cent will have been distributed making an increase of 5 per cent over last year's figure. Unappropriated profits carried forward were increased to £237,901 against £232,993 previously.

Ultramar Earns More

A marked rise in the Ultramar Company's royalty income from £616,904 to £682,133 was mainly responsible for an increase in total revenue earned during the year ended December 31, 1953, to £708,686 compared with £637,850 previously. After administration and other expenses, statutory reserves and minority interests, a surplus of £338,736 against last year's figure of £296,014 was carried forward to the consolidated balance sheet thereby increasing the group's unappropriated profits to £853,245 against £514,509 previously.

Company Shorts

Yukon Consolidated Revenue Down, Profits Up.—Total revenue earned by Yukon Consolidated Gold Corporation during the year to December 31, 1953, showed a fall to \$1,553,401 against \$1,963,933 previously. And after operating and other expenses, but before providing for depreciation and amortization, etc., the balance of profit was \$153,967 as compared with \$402,538. A depreciation charge of \$162,155, however, turned this profit into a loss of \$8,188 as against a profit of \$14,627 in the preceding period; nevertheless, after \$240,000 (\$150,000) was recovered under The Emergency Gold Mining Assistance Act a total profit of \$255,888 remained, before providing for amortization of mining claims, etc., as compared with \$214,460 previously. A lower distribution of 6 c. (8 c.) was paid on the issued capital of \$5,951,741 in common stock of \$1 each. The corporation's earned surplus as at December 31, 1953, was \$1,993,491 compared with \$2,034,708 previously.

Mountain Copper Pays Same.—A preliminary statement from the Mountain Copper Company, a copper-pyrite producer in California, U.S.A., discloses that group profit for the year ended December 31, 1953, rose to a figure of £123,524 as compared with £93,270 in the preceding period. After a credit of £32,528 (£23,000) in respect of taxation provision no longer required, the same dividend as for last year of 8d. per stock unit was paid on an issued capital of £150,000 in 2s. units which, however, has since been increased to £200,000. This payment absorbed £27,500 and after an amount of £278,117 had been transferred to general reserve, the carry forward was decreased to £121,152 compared with the previous year's figure of £270,717.

Tweefontein's Lower Profits.—Dividends and interest received during the year ended March 31, 1954, by Tweefontein Colliery showed a fall to £23,455 as compared with £30,861 in the preceding period. After expenses and taxation a net profit of £10,837 remained (£14,558) which, however, was insufficient to cover the 22½ per cent ordinary dividend—the same as last year—which, together with the preference dividends, required a total of £11,550 (£11,438). This deficit was met by a tax credit and a reduction in carry forward which ended the year at £30,452 as against £30,785 previously.

Further Capital Repayment by Modder B.—Modderfontein B Gold Mines has announced that a further repayment of 6d. per share is to be made to shareholders registered as at June 30, 1954, thereby reducing the company's capital to £280,000 in 2,800,000 shares of 2s. each.

Union and Rhodesian's Increased Profits.—Due to profits of £35,005 (nil) from sales of claims the total revenue earned by Union and Rhodesian Mining and Finance Co. during the year ended December 31, 1953, advanced to £99,040 compared with £56,195 previously. A dividend of 1½d. per share was again paid on the company's issued capital of £600,000 in 2s. shares.

Mr. Gordon Henderson Fairmead, a director of Pahang Consolidated and formerly general manager in Malaya, has been appointed by the board as the company's managing director. Mr. F. H. Way has succeeded Mr. Fairmead as general manager in the East.

Sir Ewen Macgregor Field Fergusson has been appointed a director of Renong Tin Dredging.

Mr. F. C. Bowring has been elected chairman of Lobitos Oilfield and of Anglo-Ecuadorian Oilfields in succession to the late Lord Forbes.

SELECTION TRUST LIMITED

MR. A. CHESTER BEATTY, JNR.'S STATEMENT

The twenty-first annual general meeting of Selection Trust, Ltd., was held on July 15 in London. The following is extracted from the circulated Statement by the Chairman, **Mr. A. Chester Beatty, Jr.**:

The gross revenue of the Company and its subsidiaries for the year ended March 31, 1954, was £1,577,041, which was £389,599 less than for the previous year, because lower dividends were paid during the year by Consolidated African Selection Trust and Tsumeb Corporation. Further, although the same rate of dividend of \$1.50 per share was paid by the American Metal Company, its value to us was reduced because the double taxation relief in respect of it was made less favourable by the transfer to Northern Rhodesia of the control of the Rhodesian copper companies. The profit from realization of investments was also lower at £42,491, compared with £208,181.

Provision for taxation was £830,469 after crediting a total of £91,372 provided in previous years but no longer required.

The net profit came out at £678,025, against £752,841.

The final dividend is 3s. 0d. per unit of stock, which will make a total distribution for the year of 4s. 3d. per unit of stock, less income tax.

Hitherto we have been granted exemption by the Board of Trade from stating the aggregate market value of our quoted investments on the grounds that, in our view, Stock Exchange prices have only a limited value as a guide to the true market value of large investment holdings such as ours. However, the South African Companies Amendment Act 1952, which came into force on January 1, 1953, does not permit exemptions from this requirement, and accordingly all South African companies, as well as English companies having a place of business in the Union, have to disclose the market value of their investments. We therefore felt that our stock holders should be provided with similar information. On the basis of Stock Exchange prices at March 31, 1954, the market value of the quoted investments was £10,346,387, compared with a book value of £2,684,535.

The American Metal Company, in which we have our largest and most important investment, has had another satisfactory year. Owing to lower prices of base metals during 1953, particularly of lead and zinc, its operating income diminished considerably but this was offset by increased dividend income mainly derived from its investments in copper companies, and the net profit of about \$10,000,000 for 1953 just exceeded that of the preceding year.

It is, as you know, through the American Metal Company that we maintain our interest in Roan Antelope Copper Mines and Mufulira Copper Mines, two of the big Northern Rhodesian copper producing companies which my father founded some 30 years ago and which, together with Rhodesian Selection Trust and other associated companies, moved their seat of control from the United Kingdom to Northern Rhodesia just over a year ago. I am very glad to say that the progress of these important companies has been well maintained.

We have a valuable interest in the Tsumeb Mine in South West Africa which has proved to be an excellent investment.

Our diamond interests are in Consolidated African Selection Trust and its subsidiaries, the principal of which is Sierra Leone Selection Trust. Although our income from this source was slightly lower than for the previous year the overall position of the diamond market remains satisfactory.

During the year we extended our gold interests by acquiring a holding in Vaal Reefs Exploration and Mining Company which owns freehold and mineral rights in the Klerksdorp District of the Transvaal to the east and north-east of the properties of Western Reefs Exploration and Development Company. We have a substantial interest in Western Holdings which is in the early profit-earning stage and results from the plant are steadily improving.

A feature on the exploration side of our business was the exercise during the year by Bikita Minerals (Private) Limited of its options over the lithium-beryllium properties in Southern Rhodesia to which I referred last year.

In reviewing the results of the past year I feel that satisfactory progress has been made under conditions which were less favourable to established mining businesses than those of recent years. However, since the removal of controls by the United States Government and the discontinuance of bulk buying by the United Kingdom Government, metal prices, although lower, have been fairly stable—especially for copper—and the demand for copper has been well maintained. I hope therefore that our dividend income for the current year will not be less than for last year.

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KADUNA PROSPECTORS, LTD.

The Thirty-ninth Annual General Meeting of Kaduna Prospectors Limited was held in London on Tuesday last.

The following is an extract from the Review of the Chairman, **Capt. Hugh Vivian, M.Inst.M.M.**

Production during the year amounted to 116 tons of tin concentrate of shipping grade, compared with 77 tons in 1952.

For the first time in several years it has been possible to reverse the trend of increasing costs, and for the year under review the average cost per ton of concentrate delivered f.o.r. was £250 6s. 11d. as compared with £331 17s. 7d. in the previous year.

Sales of tin ore amounted to 120 tons and realized £59,908, an average of £499 4s. 7d. per ton. In the previous year 75 tons were sold at an average price of £688 3s. 11d. per ton.

Mining profit for the year, after providing for mining charges, royalties, freight, smelting charges, London charges and Directors' remuneration, was £9,144 as compared with £12,866 in the previous year. To this mining profit there have been added £574, income from investments, £273, interest received, and £371, miscellaneous receipts. During the year expenditure on prospecting on exclusive prospecting licences amounted to £80, and this has been written off. There has been provided for Excess Profits Levy on the profits of the year, £650, also £1,600 for Profits Tax and £4,735 for income tax, leaving a net profit for the year of £3,297.

An interim dividend of 8½ per cent, less income tax, was paid on February 2, 1954, and the Directors now recommend a final dividend of 25 per cent, less income tax, making a total for the year of 33½ per cent, less income tax.

At December 31, 1953, measured ore reserves totalled 111 tons, and indicated reserves 42 tons.

The International Tin Agreement, embodying proposals for restriction of output and the formation of a tin Buffer Stock with a view to the stabilizing of the price of tin at a reasonable level, was ratified by the Nigerian Government on March 25, 1954. We understand that if it comes into force this Company will be required to contribute to the Buffer Stock the equivalent of approximately 8.7 tons of metal, of which not less than 25 per cent must be paid in cash at £640 per ton.

The report and accounts were adopted.

THE KADUNA SYNDICATE, LTD.

The 43rd Annual General Meeting of Kaduna Syndicate Limited was held in London on Tuesday last.

The following is an extract from the Review by the Chairman, **Capt. Hugh Vivian, M.Inst.M.M.**

Production during the year amounted to 327 tons of tin concentrate of shipping grade, compared with 271 tons in 1952. The larger output was in some measure due to a greater yardage of ground being treated and also to a higher rainfall resulting in an increased yield of tribute tin. The average value per cubic yard of ground worked, excluding tribute tin, was 0.66 lb. as compared with 0.64 lb. in the preceding year.

For the first time in several years it has been possible to reverse the trend of increasing costs, and for the year under review the average cost per ton of concentrate delivered f.o.r. was £232 6s. 1d., as compared with £272 7s. 9d. in the previous year, and £257 3s. 3d. in 1951. Sales of tin ore amounted to 345 tons and realized £174,510, an average of £505 16s. 6d. per ton. In the previous year 225 tons were sold at an average price of £686 13s. 7d. per ton.

Mining profit for the year, after providing for mining charges, royalties, freight, smelting charges, London charges and Directors' remuneration, was £36,006, as compared with £52,230 in the previous year. To the net profit of £13,222 have been added the balance of unappropriated profits brought forward, £12,651, and previous provision for taxation no longer required, £1,506. A sum of £1,415 has been transferred to provision for Staff superannuation, leaving an available balance of £25,964. An interim dividend of 16½ per cent, less income tax, was paid on February 2, 1954, and the Directors now recommend a final dividend of 33½ per cent, less income tax, making 50 per cent for the year.

At December 31, 1953, measured ore reserves totalled 651 tons, and indicated reserves 124 tons.

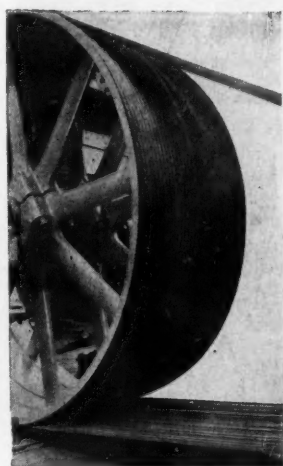
The International Tin Agreement, embodying proposals for restriction of output and the formation of a tin Buffer Stock with a view to the stabilizing of the price of tin at a reasonable level, was ratified by the Nigerian Government on March 25, 1954. We understand that if it comes into force this Company will be required to contribute to the Buffer Stock the equivalent of approximately 32 tons of metal, of which not less than 25 per cent must be paid in cash at £640 per ton.

The report and accounts were adopted.

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THE KINTA TIN MINES

MR. A. G. GLENISTER'S STATEMENT

The fifty-third annual general meeting of The Kinta Tin Mines Limited, was held on July 15, at 65 London Wall, London, E.C.

Mr. A. G. Glenister, Chairman of the Company, presided.

The following is an extract from the circulated Statement of the Chairman:

The profit for the year, ended December 31, 1953, before charging taxation, was £78,479 which, with the addition of the previous year's carry forward of £24,726 amounts to a total of £103,205. Of this, provision for taxation on the year's profit absorbs £43,145, written off property and plant £17,604, reduction of the War Damage Award in respect of the mine £1,525 and writing off the balance of the Sanglop Estate rehabilitation expenditure £904. Shareholders received four dividends totalling 1s. 7½d. per share and these absorbed £21,150 net. This leaves a balance of £18,877 which the Directors propose to carry forward to the current year.

The following table shows how the profit has been applied:

	Percentage of profit 1953
Taxation (including Tin Export Duty) ...	66.2
Reserves, writings off, etc. ...	19.2
Dividends ...	20.2
	105.6
Decrease in Carry Forward ...	5.6
	100.0

Tin Export Duty and Taxation together make a total of £59,102 contributed by the Company during the year to Malayan and United Kingdom Government funds.

OUTPUT AND PRICE

The output of 339 tons from the treatment of 1,140,100 cubic yards represented an average recovery of .67 lb. per cubic yard as against 304 tons from 1,105,700 cubic yards in the previous

year, representing an average recovery of .61 lb. per cubic yard.

The tin-ore produced realized an average of £407 per ton as against £572 per ton in 1952. The use of electric power which became available from August onwards, necessary to set free more cutting water at the Lallang Section, is reflected in the increase in the cost per cubic yard from 14.80 pence to 15.74 pence.

The General Managers anticipate that during the current year, lower returns will be obtained from the Lallang Section but that, with the development in depth of the new paddock at the Damak Section, the over-all rate of output should be maintained. The output for the first five months of the year totals 120½ tons.

Whether the proposed International Tin Agreement is ratified or not, the tin-producing industry faces a period of uncertainty and it is quite impossible at the present time to make a forecast regarding its future prospects. The company is well equipped both financially and at the mine, to face the future, but, with the tin price at a low level and in view of the possible repercussions, including restriction of output, which may arise from the operation of the proposed International Tin Agreement, shareholders will be well advised to anticipate profits and dividends on a lower scale than has been the case during the last few years.

Although Communist terrorists were reported from time to time near the pipe-line intakes, there were no incidents during the year at the mine itself. The general security position has improved but there is no room for complacency, and I feel sure that shareholders would wish me to express our appreciation of the efficient manner in which the General Managers and the staff at the mine, both European and Asian, have carried on their work.

The report and accounts were adopted.

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TANJONG TIN DREDGING

MR. A. G. GLENISTER'S REVIEW

The twenty-eighth annual general meeting of Tanjong Tin Dredging Ltd., was held on July 15, at 65 London Wall, London, E.C.

Mr. A. G. Glenister, Chairman of the Company, presided.

The following is an extract from the circulated Statement of the Chairman:

The profit for the year ended December 31, 1953, before charging taxation, was £144,145. £54,821 was brought forward from the year before, making a total £198,966, from which must be deducted £90,200, the provision for taxation on the year's profit. Capital expenditure written off amounted to £10,220 and War Damage Award adjustment to which I refer below, to £3,987. Shareholders received four dividends totalling 2s 4½d. per share and these absorbed £47,852 net. This leaves a balance of £46,707 to the credit of Profit and Loss Appropriation Account which your Directors deem it prudent to carry forward to the current year.

The following table shows how the profit has been applied:

	Percentage of profit 1953
Taxation (including Tin Export Duty) ...	73.7
Reserves, writings off, etc. ...	6.9
Dividends ...	23.3
	<hr/>
	103.9
Decrease in Carry Forward ...	3.9
	<hr/>
	100.0

Tin Export Duty and Taxation together make a total of £151,279 contributed by the Company during the year to Malayan and United Kingdom Government funds.

PAST YEAR'S OPERATIONS

The tin ore won realized an average of £428 per ton as against £590 per ton the year before. Working costs were reduced from 10.46 pence to 9.00 pence per cubic yard. The

output of 780 tons of tin ore from the treatment of 4,552,000 cubic yards represented an average recovery of .39 lb. per cubic yard as against 980 tons from 4,205,960 cubic yards and an average recovery of .52 lb. per cubic yard in the preceding year.

As foreshadowed in my statement last year No. 2 Dredge was working through an area, a large portion of which had already been dredged to a depth of some 60 feet by No. 1 Dredge. During the current year the General Managers anticipate a somewhat lower rate of output, as No. 2 Dredge is not expected to pass out of this previously dredged ground until the end of the year and No. 1 Dredge will be treating rather lower grade ground. Output for the first five months of the current year totals 291 tons.

The Grab Dredger (Experimental) Syndicate, of which this Company is a member, has reported that the grab dredge commenced intermittent experimental operation and adjustment in March last, and the General Managers consider that it will prove capable of providing the data required.

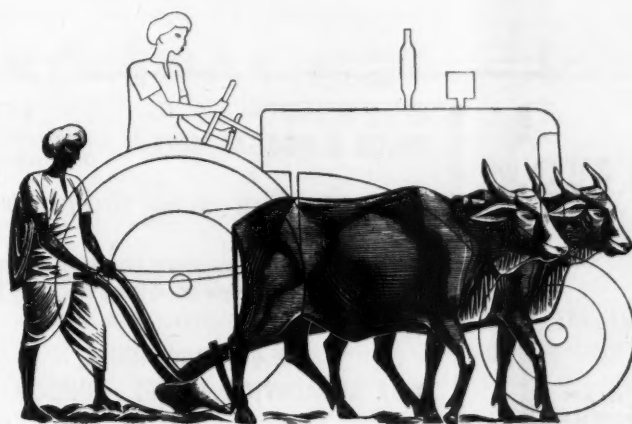
Whether the proposed International Tin Agreement is ratified or not, there are uncertain times ahead and, although the Company is well placed to meet them, a lower standard of profit and dividends is to be anticipated.

Communist activity continues in the district, but there were no terrorist incidents actually on the property during the year. Although general security in Malaya has shown improvement, conditions of life and work there are still most trying and our best thanks are due to the General Managers and the staff at the mine, both European and Asian, for the way in which they have carried out their duties.

The report and accounts were adopted.

DIVIDENDS

Anglo-Alpha Cement 4% (August 6)
 British Tyre and Rubber 7½% i (July 28)
 De Beers Consolidated Mines 10s. (July 28)
 National Mining Corporation 10% (July 29)
 Nigerian Consolidated Mines 5% i (July 20)
 Premier Consolidated Oilfields 20% (July 29)
 Rhokana Corporation 5½% (June 29)
 i interim



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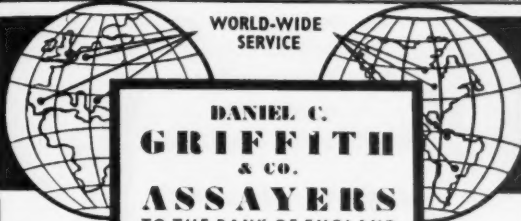
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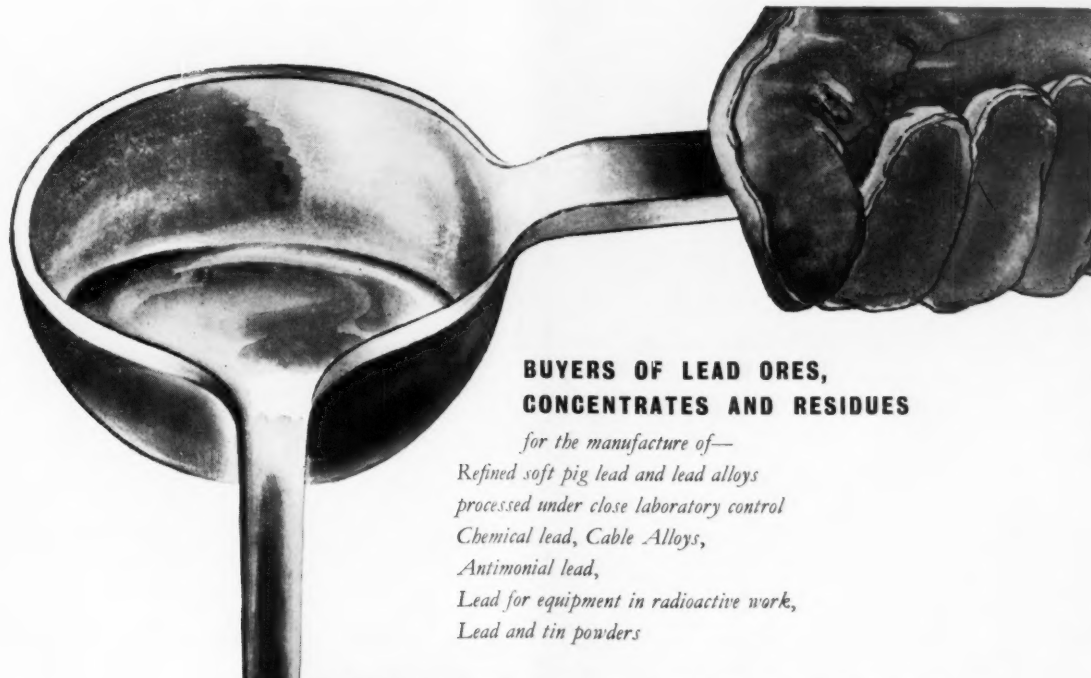
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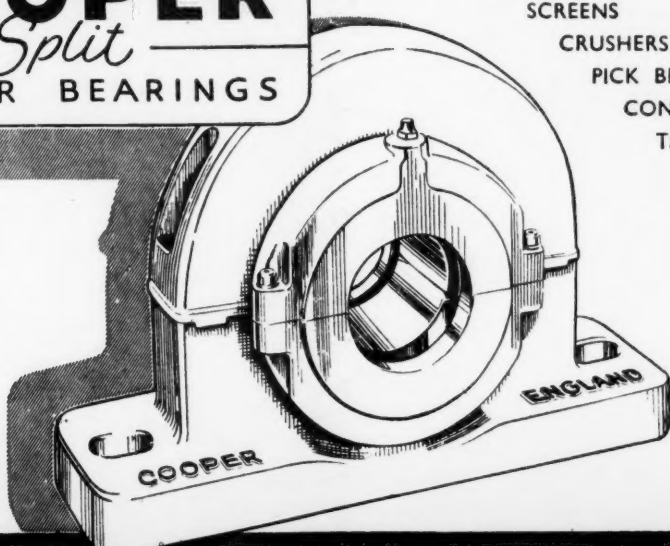
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